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## Big Money Must Come to the Rescue

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Editor, The Iron Age

THE steel industry is now reduced to one-third of its normal vitality. It is rapidly bleeding away its assets and its employing power. And what is true of the steel industry is also true for the greater part of the varied industries which use steel as a principal product.

Something must be done about this and done quickly if we are to avoid disastrous consequences. It is no secret to anyone that unemployment is steadily increasing and that surpluses as well as individual savings are continuing to melt away.

What is the way out?

The emergency is too immediate to seek relief through new construction projects which cannot be started for months. It is too great to expect a solution through any possible increase in the sale of cheap cars. It cannot come from an increase in demand from consumers who have had their incomes or wages diminished considerably more than the decrease in retail price levels. "Big" money, not little money, must come to the rescue.

One way out is illustrated in the case of one of our large steel making concerns which is now operating at a loss on a level of approximately 20 per cent. This company has heretofore practiced job rotation, but recently reached a stage where an increasing number of men had to be let go because there was not enough work, rotating jobs, to provide even a bare living for those employed. Yet this company has on its books enough

business, held up for lack of financing, to immediately, upon its release, bring the company's production rate above 50 per cent, double its employment and put the concern on a profit-making basis.

The suspended orders, in this case, represent Federal, municipal and utility projects which have passed the stages of authorization and engineering and which are merely waiting for the credit starting gun.

This is but one instance of many. Enough "self-liquidating" projects, public and private, are now awaiting release through financing to go far toward breaking the vicious spiral of continuing destructive deflation. The reequipment of our industrial plants on a new efficiency level, through modernization, falls into this constructive "self-liquidating" category.

Big money, not little money, must come to the rescue. Is it doing so? Despite the efforts of the Federal Reserve System to bring about credit expansion, the member banks are doing very little with their additional reserves except to pay off their indebtedness to the Federal Reserve. In the New York district, for example, there was a decline of \$21,000,000 in total loans and investments in the week ended May 25. Investments increased \$33,000,000, but loans on securities declined \$30,000,000 and other loans \$24,000,000. These figures indicate a continued deflationary trend and an accumulation of idle funds.

It would appear that our private

financial physicians, who have been furnished, through Governmental acts, with a plentiful supply of credit life blood and whose function it is to inject this into the business and industrial body, have not done what was hoped and expected. If a credit transfusion is not soon made, our bankers may be invited to attend the obsequies of American business. It will not be pleasant for them, for they may also occupy a place in the hearse. For the continuance of credit and business contraction may actually force an extension of Government control or ownership of railroads and eventually other of our basic businesses. Moreover, this double contraction is establishing a market value upon which they would assuredly be taken over at distress prices. It is an anomaly when conservative financiers, through either inability or unwillingness to put dollars to work, are thereby helping to force events in a direction pleasing to the socialistically inclined!

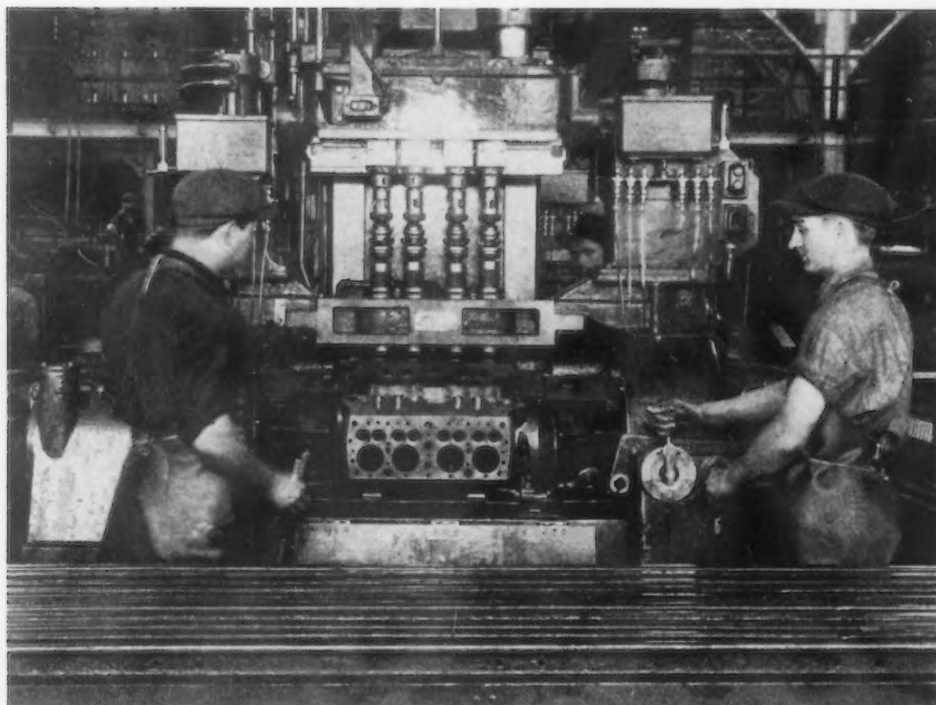
We cannot wait for new industries, new products, new projects, to bring vitality back to American business. There are plenty of established industries, projects and products which can quickly be made to function more normally, provided we find the way to give them an infusion of credit and confidence.

Quick action is essential. We cannot wait for legislation which will balance the budget, essential as that is. Big money must come to the rescue—and soon.





# Machining the Ford V-8 B



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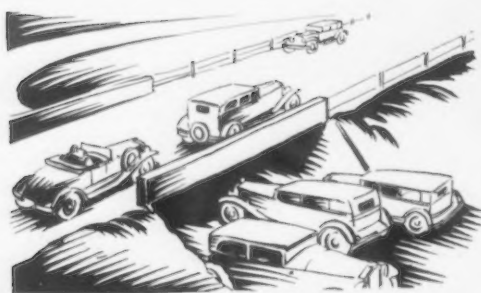
**H**ONING the cylinder block on a Ford-designed machine. Both the machine and fixture are hydraulically operated. After the honing operation is completed, the operator measures the size of the cylinder bores with a hand gage. In case the desired tolerance has not been attained, the operator can put the block back into machining position hydraulically by turning the crank at the right.

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**D**RILLING the main bearing bolt holes with a machine designed by Ford engineers. The block, securely held in the fixture, feeds down onto the drills by mechanical action, but is automatically returned to loading position after the operation by hydraulic means. The lever seen in the center controls the equalizing of the block in being set into the fixture. That is, equalizing locaters on each bank of the block are tied together and equalized across each other. The locating points of the equalizers are inside the piston core.

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# V-8 Block

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**P**RODUCTION at the Ford plant at Rouge is now well under way. The June schedule calls for 90,000 cars, of which the V-8's will constitute a large percentage.

There is keen interest in the metal-working field in the methods that are being employed in the manufacture of the new Ford 8 motor, particularly in view of the low price established for the car. THE IRON AGE is pleased to present, on the following pages, the first description of the principal machining operations on the Ford V-8 block.

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**M**ILLING the right and left banks of the cylinder block in a rotary milling machine. One side of the machine mills the left bank, after which the operator removes the block and puts it on the other side for the milling of the right hand bank. Note the inclosed worm drive for operating the entire drum of 10 cylinder blocks, five on each side. Production of this machine, including both right and left bank milling, is 30 blocks an hour.

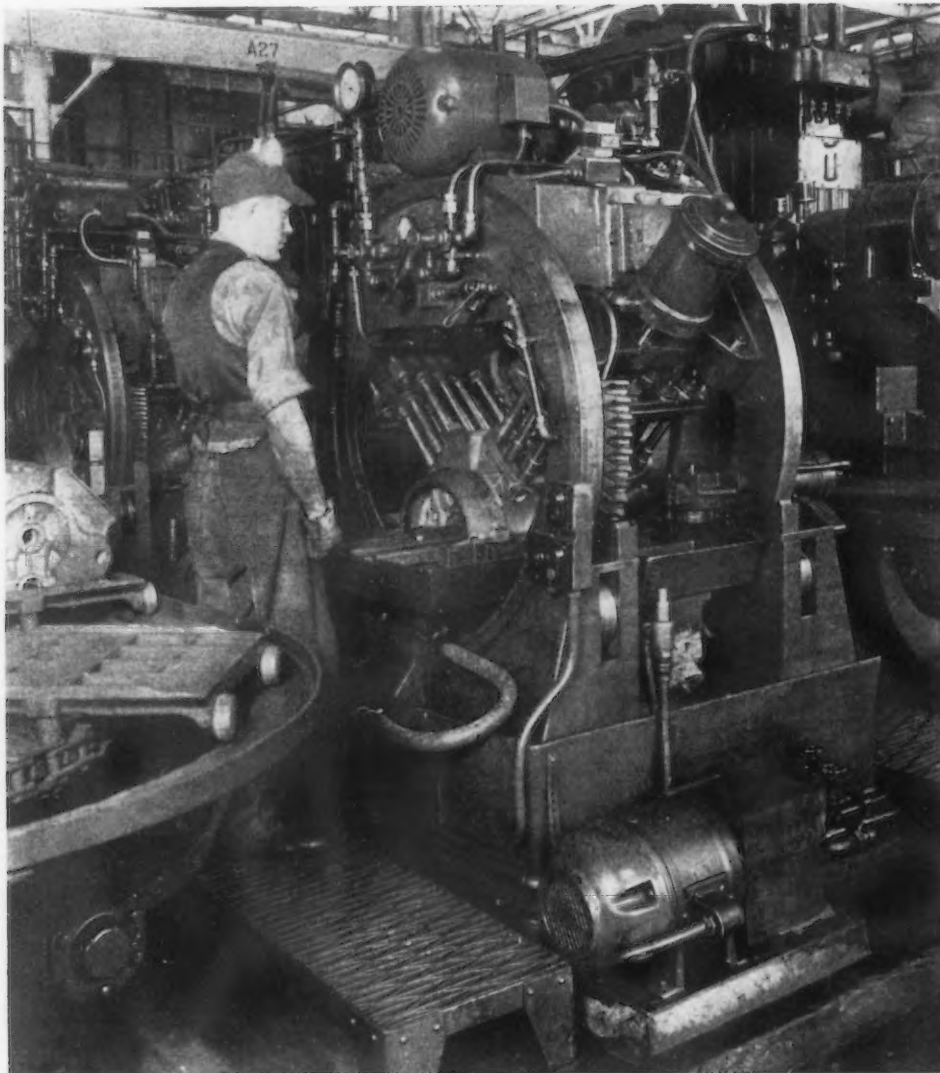
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**B**ORING the right and left bank cylinder bores. This type of machine does the rough boring, the semi-finish reaming and the finish reaming operations. As the fixture for the block is indexed hydraulically for boring the opposite bank, it automatically advances the amount of the offset between the two banks. The feed of the boring bars is mechanical. At the left can be seen the hydraulic control of the locating plungers which accurately bring the fixture and block in proper alignment. The indexing operation is carried out to limits of 0.001 in.

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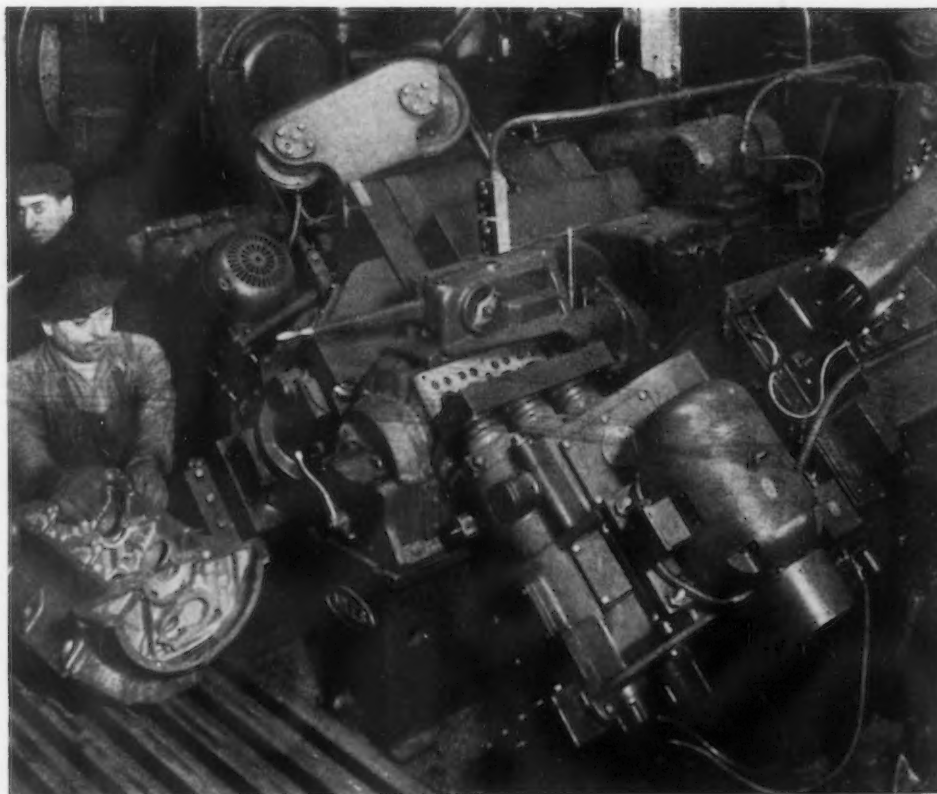
**W**ATER testing the cylinder block. This is done under a pressure of 60 lb. per sq. in. The sealing plungers, of which there are 28 on the right bank, 28 on the left bank and 6 on the bottom, are hydraulically operated. The block can be rolled completely over in this testing device, but for inspection purposes is rolled 180 deg. Blocks are tested by this method at the rate of 40 an hour.

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**T**HREE exhaust pads on either side of the cylinder block are milled on this machine at the rate of 90 an hour. Cutters work up on a 45-deg. angle.

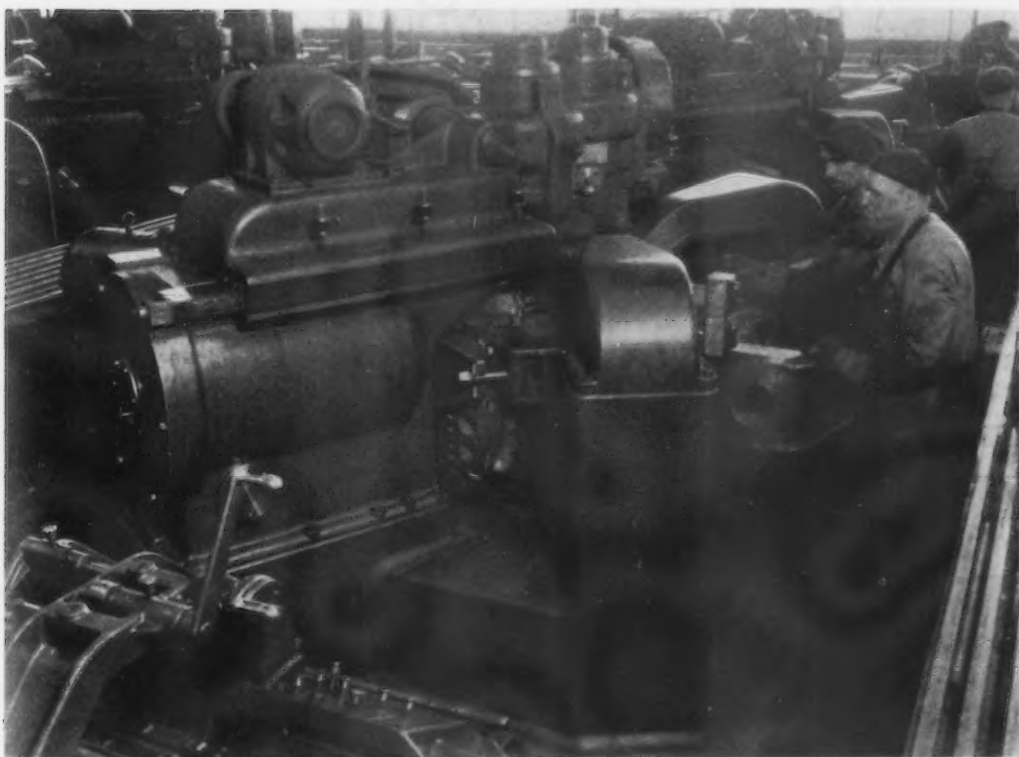
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**W**ORKERS are not required to exert any physical strength in lifting cylinder blocks on the overhead conveyor to be carried to the assembly line. Instead the conveyor dips so that all the worker must do is securely fasten hook to the block.



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**M**ILLING the pump gear housing, the face and rear end of the block and the oil seal groove. There are three stations, one for loading, another for roughing and a third for finishing operation. Note at the left the traveling cutter head, which moves in and out synchronizing with the index of the rotor. The rotor carries the work and the fixtures. The machine is mechanically operated and turns out 64 blocks an hour.

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## Machining the Ford V-8 Block

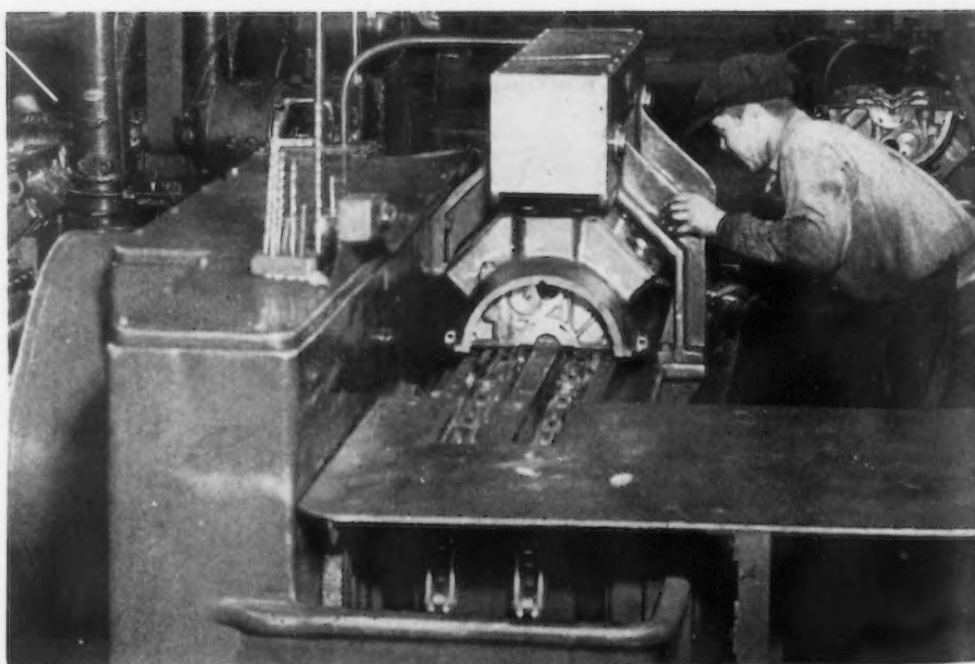
ON the assembly line, showing eight valves being ground in simultaneously. All of the operations along this line are carried through on machines with the same type of indexing fixture as is used in machining the cylinder block.

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**A** CONTINUOUS broaching operation. The cylinder block is transported on a conveyor through this machine, not stopping during the rough sizing of the main bearing hole. The block is supported at the top by a small, rectangular box shaped conveyor which holds it down onto the cutting broach. Otherwise, there would be a tendency for the block to jump up when the cutting work is started. One hundred and twenty blocks an hour pass through this machine.

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# Polishing Stillson Wrenches

ONE of the finishing operations on wrenches at the Boston plant of the Walworth Mfg. Co. is to polish all surfaces. This as may be imagined is a rather extensive procedure requiring the continuous work of a long line of polishers. As one of several efficiency measures this whole polishing procedure has been studied and reorganized. The present arrangement of polishers is shown in Fig. 1. Each operator is served by two gravity roller conveyors, one on his left to bring the work to him and one on his right to carry it away. The parts are transported in steel pans or tote boxes with flat riveted handles and flat bottoms to facilitate travel on the rollers. Unusual care has been taken in the arrangement of polishing wheels and exhaust system. The row of polishing stands extends along one side of the plant with the operators directly in front of large windows. Along the floor back of the stands extends the piping which is connected to powerful exhausters. Each wheel has an exhaust hood which is hinged and quickly removable to permit changing wheels.

The method of handling polishing wheels to and from the operator is somewhat similar to that used for the wrenches. The reconditioned wheels are stored under the conveyor at the operator's left and the used wheels

are placed by him under the opposite conveyor. The polishing wheels used are standard steel-centered canvas wheels coated with emery. The supply of wheels is taken care of by two men who are constantly engaged in serving the polishers. These

two collect the used wheels, trim off the surface, put on a fresh coating of glue and then roll the wheels in heated pans of prepared emery. A corner of the wheel reconditioning room is shown in Fig. 2.

The general scheme of glue coating



FIG. 2—A separate room is used for reconditioning polishing wheels.

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FIG. 1—Wrench polishing has been speeded up by the use of gravity roller conveyors.

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and rolling in emery is clearly shown. The wheel to be coated is placed on a horizontal arbor close to an electrically heated pot of glue. The steam heated table containing the long steel pans of emery is within a few feet of the gluing station so that the wheels may be rolled in the hot emery when the glue surface is in exactly the right condition. The recoated wheels are placed on racks for drying and are then taken for distribution to the polishers.





FIG. 1—Steel sheets for automobile bodies are successfully shipped in open gondola cars.

THE receiving platform at the main plant of the Edw. G. Budd Mfg. Co., Philadelphia, is served by a standard gage track with space for 8 or 10 cars, and both the track and the platform in turn are served by an overhead traveling crane. The present scheme of unloading steel sheets at this platform involves the use of a special crane bucket to lift the sheets on to waiting skids and the use of lift trucks to transfer the loaded skids either to the storage space or to the first manufacturing operation.

#### Unload Car in 17 Minutes

Previous to the present arrangement, sheets were shipped to the plant in box cars, and four men using trailer trucks unloaded one such car in a half day. Now all sheets are received in open gondola cars, as shown in Fig. 1, and three men unload a car containing 40 tons of sheets in 17 or 18 min. In addition to this saving in time of unloading, the open cars afford a marked saving in the time of loading and bracing for shipment at the mill. The method of loading the open car is simplicity itself. Wooden spacer strips are placed on the floor of the

## Reduces Cost of Handling

THE Edw. G. Budd Mfg. Co., Philadelphia, uses a large tonnage of sheets for the manufacture of auto bodies, and the handling of these sheets from the steel mills to the first manufacturing operation has been carefully studied and costs have been reduced by the installation of modern equipment and the use of open gondola cars.

In a recent issue of THE IRON AGE it was stated in error that the freight rate for sheets on gondola cars was less than when box cars were used. The freight rate is the same in both cases even though the box car represents a considerably higher capital investment. The large saving which the Budd company has effected through the use of gondola cars has to do with the problems of bracing and of loading and unloading. Some details in this connection are described in the accompanying article.

car and nailed in position if the car has a wooden bottom. Otherwise they are braced from the sides. A load of sheets weighing 7000 or 8000 lb. is then deposited by crane on these spacer strips, and then on top of that load additional spacers are placed and a second load is placed on them. In some cases three loads are placed one on top of another, but usually the capacity of the car is reached with the double tier loading.

#### No Trouble with Rusting

Each pile of sheets containing one, two or three loads is wrapped with heavy waterproof paper. During snowy weather an additional piece of waterproofing is wrapped around from the bottom to protect against standing snow. No bracing or shoring of any kind is used, as it has been found by experience that the piles of sheets stay put without shifting. This question of shifting is one of the serious disadvantages of the box car. The usual method of loading in a box car is to brace the piles of sheets against the car sides, and as there is a certain amount of weave to the sides in transit, the sheets are apt to move back and forth over one another. This movement is slight, to be sure, but it is, nevertheless, sufficient to scratch or injure the surface enough to cause rejection for automobile body work.

The sheets received at the Budd plant are either auto body sheets or standard hot-rolled sheets, and with these grades, and with the method of

wrapping described, no trouble from rust and no injury from shifting is experienced. When the car is to be unloaded, the covering is removed, a special bucket is lowered over the pile and its lower flange is inserted at the point where the spacer strips separate the loads. Fig. 2 gives a side view of the bucket, which has just picked up a load from the floor of the car. The design of the special bucket is more clearly indicated in Fig. 3. Two double thread tightening devices are placed just above the frame work, and after the bucket has been lowered over the sheets the operator gives the wheels a few turns to move the bucket clamps inward into position for lifting.

#### Aim to Eliminate Storage

One man operates the crane, one man stands in the car, as shown in Fig. 3, to place the bucket, and a third man is on the platform to unload the sheets on to the lift truck skids. This makes it easy for three men to unload ten cars in the time formerly required by four men to unload one car. In addition to the saving in labor, experience shows there is a substantial saving in demurrage charges.

The ideal toward which the plant strives is to have the sheets go direct from the cars into the manufacturing sequence without having any storage interval. The supplying steel mills are all within a comparatively short distance of the plant, so that the average time in freight transit



# ing Sheets ▲ ▲ ▲

is two or three days. And thus by close cooperation with the mills it is often possible to have the sheets arrive in such quantities and at such predetermined times that the receipts keep pace with the manufacturing schedule and no storage is required.

In actual practice, this ideal is not completely met, and some sheets therefore go into storage. The same skids are used, however, whether the sheets are placed in storage or in position for the first press or rolling operation, and handling is thus minimized. For deep draw work, the sheets go first to a set of bending and straightening rolls for the purpose of livening up the fibers. The handling from such bending rolls to the first press operation is then on small hand trucks. During the manufacturing operations, handling is largely by means of overhead trolley conveyors; however, much handling from one press to another in a close sequence is on smooth steel-top tables.

THE question of the best method of shipping sheets is controversial and while the present article describes the saving which one company has experienced through changing from box cars to gondola cars, other companies have found the box car a less expensive means for shipping sheets. The divergent opinion on this question is largely due to the use of different types of handling equipment for loading and unloading. A recent development in short radius lift trucks makes it possible to load small sized sheets in a box car at low cost. With large sheets the Budd Co. finds this method unsatisfactory.

The Budd Co.'s experience of the rubbing of sheets in transit, due to the weaving of box car sides, is based on a method of piling and bracing in box cars which is now being superseded by the so-called unit load method in which the sheets are piled in the box car in a manner somewhat similar to that described for the gondola cars. The difficulty in this type of loading in box cars is that sufficient space must be allowed underneath each load for the introduction of the platform of a lift truck. This means greater instability which in the experience of the Budd Co. has made it necessary to use additional bracing for small sized sheets when piled in three-load tiers. Of course when the lift truck or some similar equipment cannot be used this unit load method also cannot be used.

In commenting on the general subject of shipment of steel sheets, the American Rolling Mill Co., Middletown, Ohio, says that with the unit load method no solid wood bracing is used and the same amount of bands and wire is required for gondola shipment as for box cars with the additional expense in the case of the gondola of providing a wrapping or covering of waterproof paper. This company states further that while it is true that dunnage in open cars is transported free while charged for in the box car, this does not ordinarily run in excess of 300 lb., and this small item is offset by the cost of the waterproof paper. The loading of flat cars calls for such an elaborate method of blocking and bracing that it is only used in special cases.



FIG. 2—Specially designed buckets pick up 7000 or 8000 pounds of sheets at one lift.

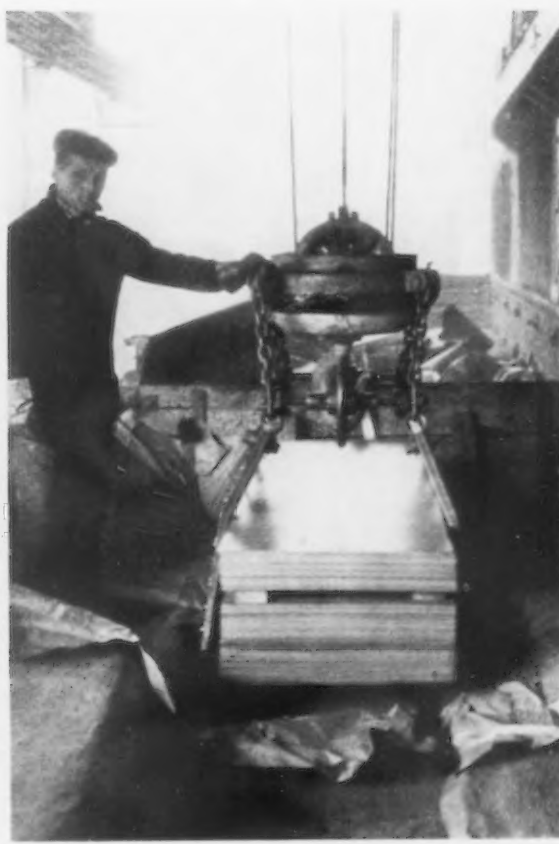


FIG. 3—The buckets, which are made of reinforced steel plate, have flanges which slip in under the load of sheets.



# Series of Turning Operations Without Labor

Seneca Falls Automatic Loaders Have Been Applied to a Group of Machines

HERE are three machines on which a sequence of operations may be performed without the use of manual labor. The installation represents an application of a new style loader added by the Seneca Falls Machine Co., Seneca Falls, N. Y., to its line of automatic loading devices. Briefly one operator does the work, which covers preparing the pieces to be machined and placing them on the conveyor at the left of the illustration. The pieces are taken automatically one by one from that point on from one machine to the other, until they are delivered to a chute on the other side of the bank of machines. The loading devices are protected by patents.

For purposes of description, the work in process is an automobile steering sector shaft. The accompanying sketches show the rough forging and the finished turned piece. The rough forgings are snagged and cut to length by the operator who has in addition only to place the pieces on the conveyor and supervise the three machines.

The conveyor carries the forgings to the centering machine. The forging, after centering, is picked up by the fingers of the loader and carried to a position above the rough turning machine. There it is placed between centers ready for the turning operation. Simultaneous with this operation another loader with its set

of fingers has picked up the forging that has been rough turned and has placed it in the finish turning machine, while the third loader has removed the finished piece and delivered it to the chute at the right of the group of machines.

## Centering Machine Is Automatic

The three machines comprise an automatic centering machine made by the use of two Kingsbury heads and two standard Model U automatic Lo-swing lathes. The machines operate as any standard machines would. After the machining has been completed the carriages return to the starting position and the spindles stop. It is at this point that the automatic loading arrangement is thrown in by switches placed on the machines.

The sequence of operations is as follows:

1. The fingers are lowered and grip the work.
2. The tailstock spindles are withdrawn.
3. Fingers lift the work.
4. Heads carrying the fingers traverse to the right to positive stops, which locate each individual head in respect to the machine it is serving.
5. Work is lowered into the machines.
6. Tailstock spindle advances, holding work on centers.
7. Fingers open.
8. Fingers are lifted.
9. When all heads are clear, machines are started.
10. Heads traverse to the left ready to repeat cycle as outlined.

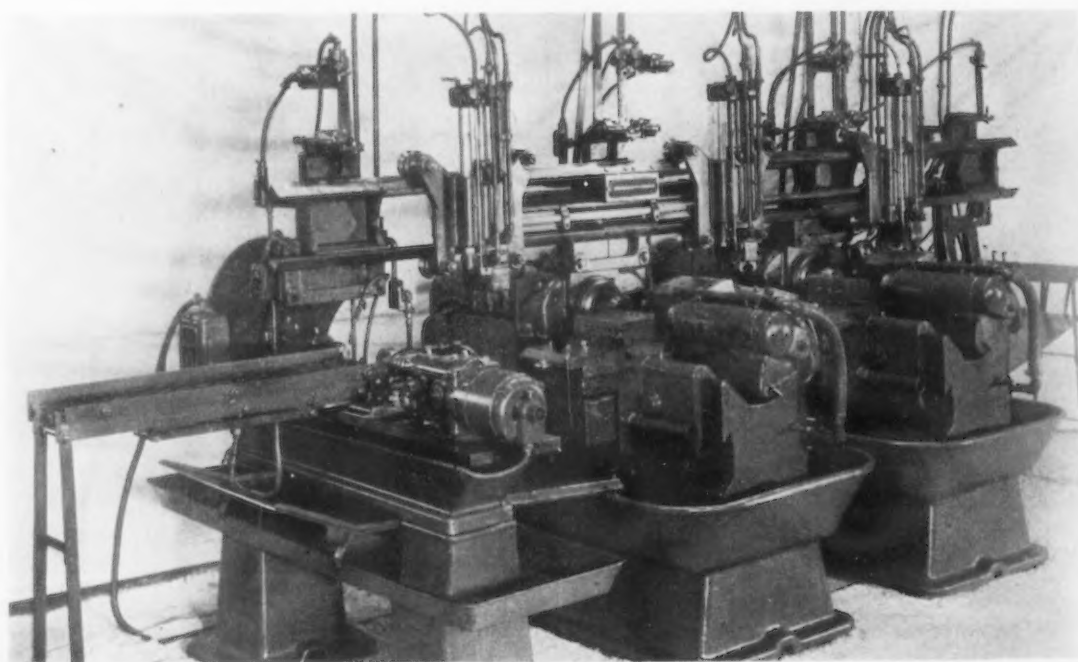
The various movements of the loading mechanism are obtained hydraulically. A cylinder and piston provides for the longitudinal or transverse movement and cylinders raise and lower the gripper fingers. Tailstock spindles are also operated hydraulically.

The oil reservoir, pump and electrically operated control valves are contained in a separate unit.

Control of the various movements of the loading device is obtained through electric switches which operate solenoid valves. The control is so arranged that the completion of each movement starts the next movement, so that the automatic loading arrangement is always in time. For instance in removing a piece of work from the machine the fingers first come down and grip the work. The closing of the fingers on the work makes a contact which actuates the tailstock spindle withdrawing the center from the work. When the center has receded a proper distance it makes a contact which causes the head to raise. This arrangement makes it impossible for the unit to get out of time. Such an arrangement is necessary in automatic loading if the unit is to function with a minimum amount of the operator's attention.

On the job in question one operator snags, cuts to length, centers, rough and finish turns 93 pieces an hour. Although the actual machining time compares favorably with machines manually operated, the total production per day is greater because they operate continually. Operator fatigue does not affect the production. Automatically loaded installations, says E. R. Smith, vice-president and general manager of the company, show an over-all efficiency of from 90 to 95 per cent.

ROUGH forgings, snagged and cut to length by operator, are put on the conveyor and reach the centering machine. From the centering machine the loader carries the centered forging to the rough turning lathe, a second loader working simultaneously takes a rough turned piece to the finishing lathe and the third loader removes a finished piece for delivery to a chute or conveyor, as the case may be, and all without manual labor.







# Sensitivity of Steel and Modern Ideas of Quality

**T**AKING as his subject "A Modern Conception of Steel Quality," H. W. Graham, general metallurgist, Jones & Laughlin Steel Corp., Pittsburgh, discussed broadly the problem of steel quality as it confronts the metallurgist, at the spring meeting of the American Iron and Steel Institute in New York, May 19. Steel quality is an elusive property which is not clearly manifest from results of conventional physical and chemical tests. In spite of metallurgical progress, there are still instances, which are very few, wherein steel refuses to function normally in either fabrication or service for no clearly ascribable reason, said the author.

## Sensitivity Defined

The main theme of the paper was the sensitivity of steel, which the author defines as follows:

The characteristic reaction rate of a piece of steel toward brittleness or hardness may be called sensitivity, or, in other words, the sensitivity of a piece of steel is its characteristic degree of reaction to conditions of thermal treatment, cold work, natural aging or similar situations.

## Two Heats Compared

"The variation of steel in its response to external conditions is evident in heat treating, in mechanical working, and in aging; and variation under these conditions will occur even in many steels of the same analysis. If sample bars are selected from two heats of the same carbon content of intermediate carbon steel and similarly quenched, one bar may be noticeably more embrittled than the other. When specimens from the same sample bars from the same two heats are cold-worked, one may again be more embrittled than the other. When the cold-worked specimens are subjected to natural or accelerated aging, one will be more embrittled than the other by the aging process. And, to generalize broadly, the specimen that reacted more sharply to quenching will also show the greatest response to cold-working and to aging. If a given steel reacts sharply to one treatment it may be expected to respond vigorously to other treatments. While these statements relate particularly to embrittlement, the situation with respect to hardening is ap-

parently largely a similar one, although the correlation is not so clearly established at this writing.

"This property of displaying a characteristic rate of reaction to varying conditions suggests a common origin or cause for the group of behavior phenomena under discussion.

"If the two steel samples above referred to are quenched, cold-drawn, aged—and then reheated and again quenched, it will be found that one of the pair again responds more sharply, and it will be the same one that showed the greatest reaction in the first case. In fact, so far as is known to those who have prepared this paper, there is no thermal, mechanical, or electrical treatment below the melting point of steel which will permanently and fundamentally alter the characteristic response of a piece of steel to external conditions. (The wording here avoids including chemical or physicochemical processes such as carburizing, pickling, or similar operations.) The specific value of any given physical property may be raised or lowered by appropriate treatments, but in a group of steel specimens each will maintain its own substantially unvarying level in a classification as to sharpness or sluggishness of response.

"The above may be restated, as a very important conclusion, by saying that the characteristic sensitivity of a piece of steel does not appear to undergo fundamental alteration so long as that piece of steel maintains its identity—that is, is not remelted. This conclusion suggests the further thought that the cause of sensitivity effects must originate in the liquid phase. The complications of sensitivity are inherently due to the fact that modern steel-making involves liquid processes. If methods could be devised to produce steel at reasonable costs without reaching the liquid condition, a multitude of present metallurgical difficulties would become nonexistent."

[At this point the author gave, as a large part of his 45-page paper, a number of examples of steel behavior under conditions of manufacture, fabrication and service in which sensitivity effects appear to present a common explanation.]

"It is most earnestly desired to

avoid giving the idea that sensitivity is an always undesirable characteristic; and that insensitive steel is always good steel, and that sensitive steel is always bad steel," said Mr. Graham. "Such a view would be incorrect and just as misleading as the assumption, frequently made in the earlier days of the McQuaid-Ehn test, that 'normal' steel was always good steel, and that 'abnormal' steel was always bad steel. So far as sensitivity is concerned, it is positive that sensitive steel is in certain applications much more useful and desirable than insensitive steel.

"It is not the intention to present this paper from an alarmist attitude. No new dangers have been presented to the fabricator or user of steel; all that has been attempted is a clearer understanding of already existing difficulties. The discussion presented is so broad as to include virtually all of the quality problems of the iron and steel industry—save perhaps in the field of corrosion resistance, and here, too, sensitivity may be present in roughly parallel fashion. The problems involved run through the entire gamut of the scope of chemist, metallurgist, and physicist."

## Author's Summary

Variations of steel quality are inadequately explained by the chemical analysis of common elements. The term "sensitivity" is suggested to refer to the characteristics of steel by virtue of which it responds in varying degree to external conditions. Sensitivity is postulated to originate in a group of elements entrapped in the solidification of liquid steel. The further source of varying sensitivity is suggested to lead in part back to the blast furnace production of pig iron. It is stated that the degree of sensitivity is a function of a heat of steel as a unit, and that physical or thermal treatment below the melting temperature is not expected to change the fundamental rate of response.

The mechanism by which a group of elements may produce variation in sensitivity is touched upon, and it is suggested that the varying degree of solubility of these elements and the associated colloidal phenomena are

(Concluded on advertising page 20)



# Large Work Handled Economically by Special Cylinder Boring and Facing Machine

**B**UILT by William Sellers & Co., Inc., Philadelphia, for the National Transit Pump & Machine Co., Oil City, Pa., the special cylinder boring and facing machine illustrated will be used to bore and face at one setting the cylinders and guides of large engine and booster pump units. This machine, believed to be the largest of its type in the United States, is unusually flexible, being suitable for cylinders of almost any kind.

The largest cylinder that can be faced is 96 in. in diameter and the maximum length of work that can be accommodated is 22 ft. The work table is 23 ft. long by 8 ft. wide, with the center of the boring bar 54 in. above. The total length of the bed is 48 ft. 8 in., and the main section, a single casting weighing 80,000 lb., is 36 ft. long. The weight of the complete machine is 162,000 lb.

## Tailstock Adjustable Along the Bed

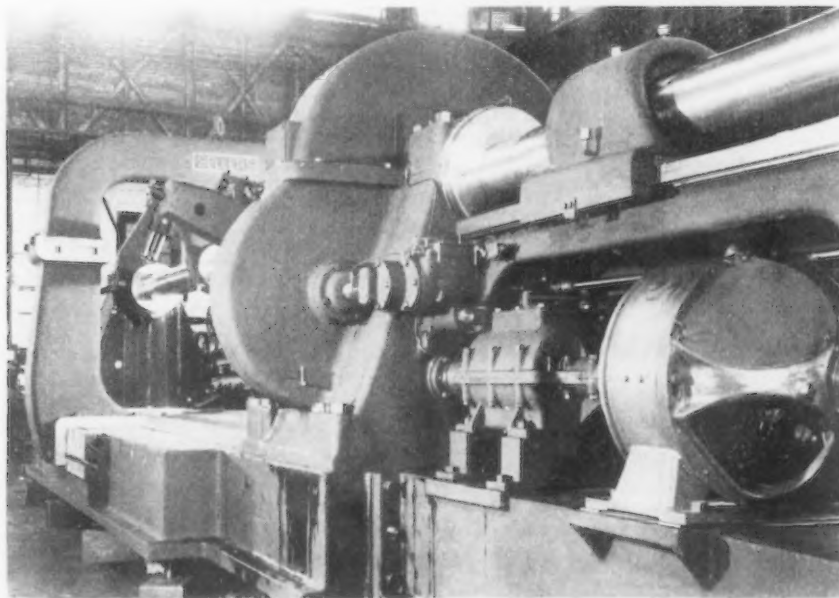
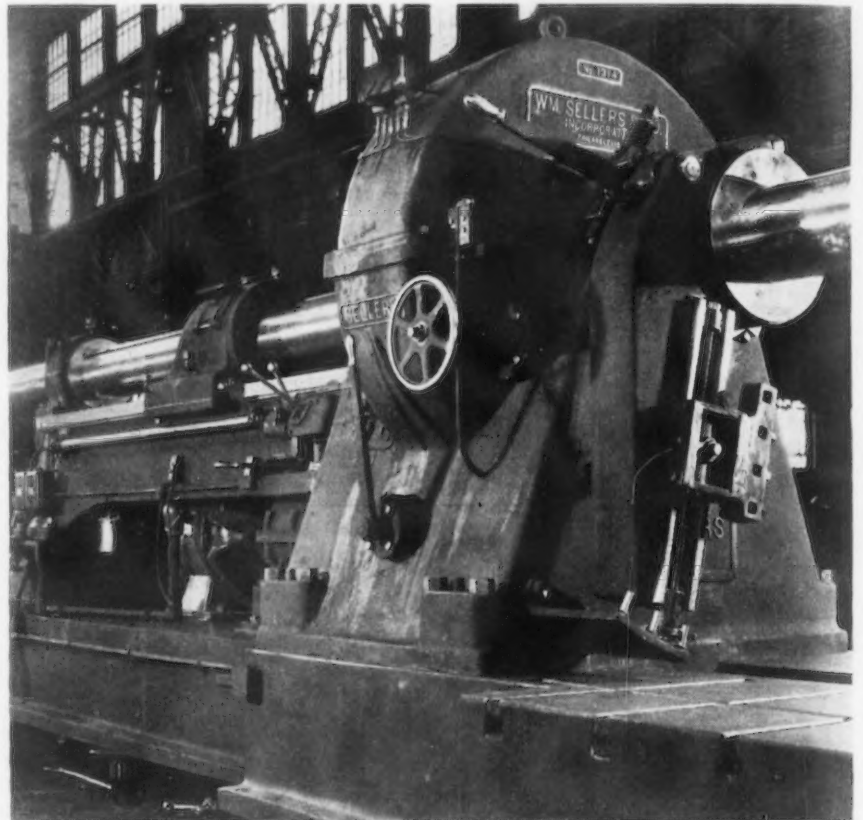
The boring bar is supported by two heads, one of which is stationary and serves as a driving unit, while the other, the tailstock, is adjustable longitudinally on the main bed.

Each head has a heavy steel facing arm driven by the bar, but mounted directly on a long stiff revolving sleeve in the head, through which the bar passes. A tool-rest, with multiple tool slots for convenient setting, is carried on each arm and is adjusted on a radial line by a novel star feed

mechanism. Powerful locks, actuated by convenient levers, permit engaging and disengaging the facing arms even while the bar is rotating.

The bar is 43 ft. 8 in. long, 12 in. in outside diameter and has a 6-in. hole throughout its length. It is bored at

the working end to fit cutter head shanks or smaller bars. The bar has two full length key-ways, 180 deg. apart, and is carried in and keyed to the long revolving sleeves in each head. Because the sleeves rotate in the heads, wear on the bar, due to



**T**HE steel facing arm, shown in the view above, is driven by the bar. Each arm carries a tool-rest which has multiple tool slots and is adjusted on a radial line by a star feed mechanism. Among other details, the view at the left shows the arrangement of the driving motor. All motors are mounted on the machine.



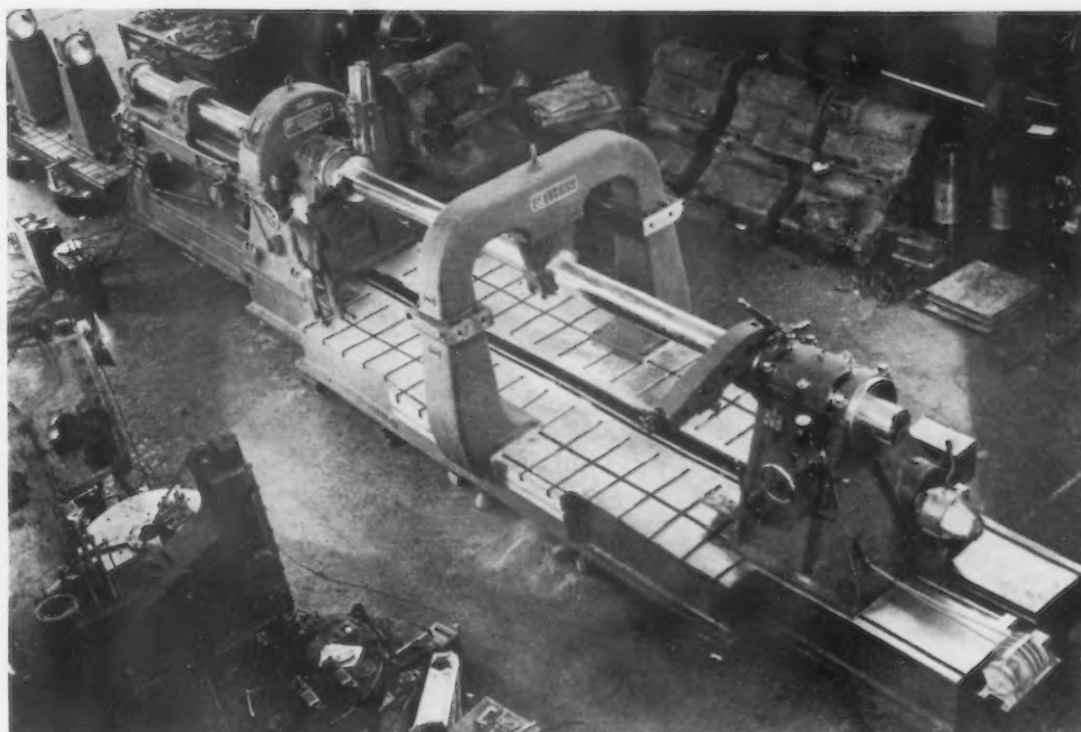
rotation, is eliminated, although the bar can slide freely when being fed or traversed.

A 40-hp., 3-to-1 motor drives the bar through a speed-change box, giving a 20 to 1 ratio, or speeds from 1½ to 30 r.p.m. An intermediate gear train engages the 60-in. herringbone main driving gear, which is attached directly to the revolving sleeve in the fixed head, thus driving the bar.

Bar feed is also actuated by the main driving motor through gearing



THIS machine was designed especially to bore and face at one setting the cylinders and guides of large engine and booster pump units. Flexibility is a feature. Cylinders up to 96 in. in diameter can be faced, and work 22 ft. long can be accommodated. The boring bar is 12 in. in diameter and 43 ft. 8 in. long; it is supported by two heads, one of which is adjustable along the bed. The gallows support is designed to permit convenient moving or re-locating of this unit on the work table. The weight of the machine is approximately 162,000 lb.



and a speed-change box, giving three roughing and three finishing feeds in each direction. The stroke of the bar is 24 ft., in three increments of 96 in. each, and has automatic knock-outs, adjustable to any position, to disengage the feed or traverse at either end of the stroke. Convenient hand adjustment is provided for the bar, as well as power traverse operated by a separate 7½-hp. motor, giving a traverse speed of 16 ft. per min. Feed and traverse are interlocked so that when the traverse push button is depressed the feed is disengaged automatically and is engaged again when the traverse button is released.

The tailstock, or adjustable head, is mounted directly on the bed. A 5-hp. traverse motor is on this head and drives through reduction gears to a vertical pinion engaging a rack located in the center of the bed close to the guiding way.

A gallows support, which allows clearance on each side as well as below the bar, is provided as an intermediate support when boring long engine bed assemblies. It is easily moved or relocated on the work table and a series of lines and T-slots facilitate squaring and setting up; if desired, the entire structure can be removed. When setting up work, it is only necessary to remove the upper portion.

Three auxiliary supports are also required to carry the bar when it is withdrawn at the rear of the machine. These, as well as the gallows support, are arranged with revolving sleeves to eliminate wear on the bar. They are provided with disappearing keys which depress when the bar enters and spring out to engage in the

keyways when the bar begins to rotate.

The lubrication has been carefully designed. All parts moving continuously are oiled by gravity feed from conveniently located central tanks, except in the case of isolated bearings. Gear boxes are oiled by splash and by conveyors so that a continuous flow of oil is maintained through the ball bearings and over the gears. For intermittent service conditions, such as traversing of the tailstock, a "one-shot" system furnishes oil under pressure to the moving parts and sliding surfaces.

The three ball-bearing motors, as

well as all the other electrical equipment, are mounted on the machine. Power is delivered to the motor on the adjustable head through a taut cable wound up on a spring reel. Interlocking is provided for the feed and traverse motors, and limit switches prevent the bar from overrunning when either feeding or traversing.

Two operating positions increase the flexibility of the machine considerably. The operator has full control at either head over all the motors, and the bar can be started, stopped, traversed or fed in either direction, by hand or power, through duplicate levers and push button stations.

## Improved Safety Push Button

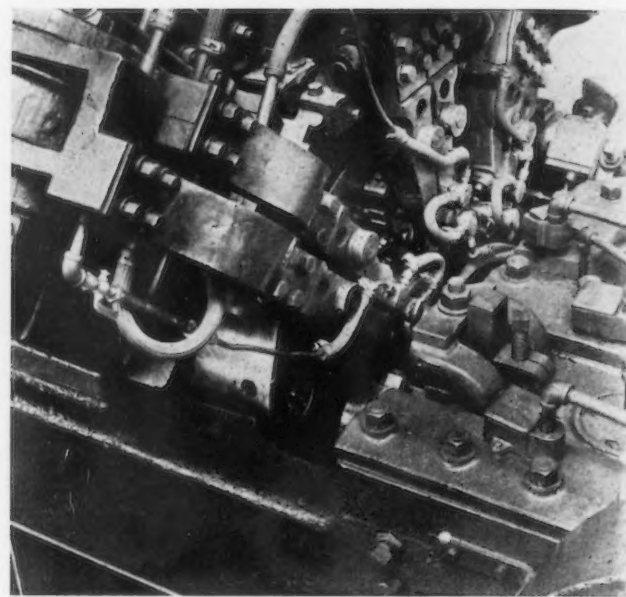
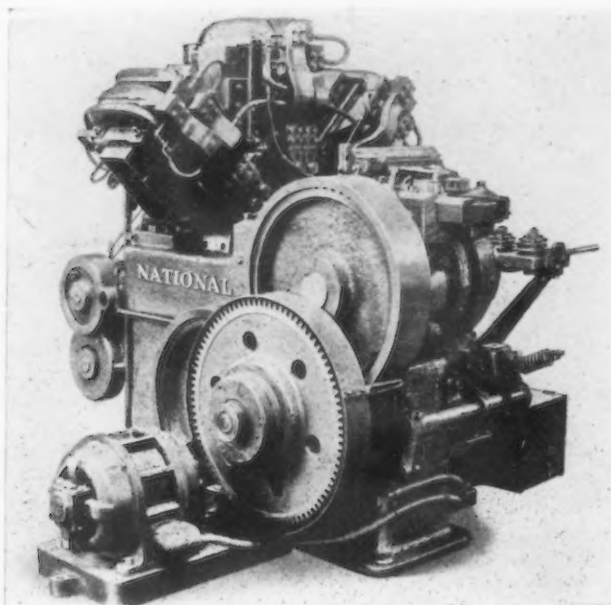
THE Lincoln Electric Co., Cleveland, has placed on the market an improved safety push button, the start button of which is located inside of the stop button, as shown. The stop button can be operated from any angle merely by striking the front of the control box with the flat of the hand, but the start button must be operated with the finger. The stop button can be locked in the off position by pushing it in and twisting it to the right. Heavy springs prevent accidental operation of either button when not locked.

It is claimed the button will handle the heaviest control circuits up to 600 volts a.c. or d.c. It is self-contained and need not be taken apart or even removed from the box cover for wiring. This new safety switch is designated as the A-31.



The start button of this safety switch is located inside the stop button.





Cold stock is fed into the machine, straightened, cut to length, heated electrically and then headed. The close-up view shows the heating terminals and, in the right foreground, the heading slide.

## Electric Header Forms Unusual Shapes Without Affecting Shank Finish

THE National Machinery Co., Tiffin, Ohio, is offering the automatic electric header, illustrated, which is built under the Kobert patents. Cold stock is fed from a coil into the machine where it is cut to length, heated to the necessary forging temperature by multi-stage electric heating and then headed.

Heating is localized and confined to the headed portion. It is accomplished progressively, in three stages, through low-voltage transformers, and is extremely rapid, the interval between heating and heading being so brief that there is little opportunity for scale to form. As a result, the heads have an excellent finish. Physically and metallurgically, they are said to have the high quality of hot headed work, while the shanks have a finish equivalent to cold headed, solid-die work.

The machine is adapted for both steel and non-ferrous metals. Advantages claimed include successful heading of alloy steels that cannot be successfully cold headed, because of fractures which develop. In one stroke and with no annealing this machine will head non-ferrous metals which, when cold headed, require two and three subsequent reheadings with an anneal before each reheading. Work with large diameter heads or heads of irregular shape which require a great deal of machining, when machined from bar stock, is said to be produced by this new method with marked economy. Because of its ability to hot form heads

of unusual shape without affecting the bright finish of the shank, this machine is considered to open a field not met by any other type of heading equipment.

Stock may be fed from a coil, or the machine can be equipped with a magazine for feeding blanks cut to length. With a magazine feed it will head blanks which have been previously threaded or machined on the end opposite the head.

Operation of the electric header is automatic and continuous, a finished piece being ejected at every stroke of the machine. High rates of production are secured.

## Combination Bench Grinding Machine

A COMBINATION bench grinder equipped with a table for face, surface, knife or die grinding, a tool rest for edge tool grinding, and an attachment for sharpening circular saws up to 22-in. in diameter, is being marketed by Samuel C. Rogers & Co., Buffalo. A 10-in. disk grinding wheel with adjustable table and a flexible shaft with outer housing bearing for housing the emery or polishing wheel can also be supplied. The machine is designated as the model K utility grinder.

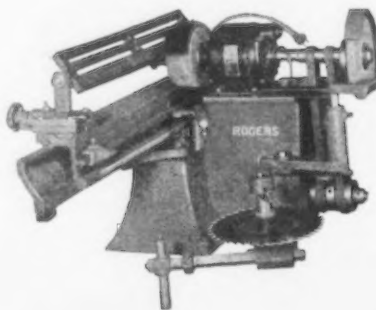
A feature is the table stop. The

operator can stop the movement of the table at any time by placing the lever in neutral without stopping the grinder entirely. This permits close, accurate work, with the operator in complete control of the machine.

Feed works are within the base, giving the carriage an even traverse and smooth reversal. The reversing mechanism is adjustable to suit the length of the knife being ground. The cross feeding mechanism consists of two hand wheels at end of the slide. The circular saw carriage is adjustable for any desired hook or tooth shape. The saw holder can be fed to and from the grinding wheel and has positive stop adjustments.

Regular equipment includes a 1/3-hp. ball-bearing motor, toggle switch, cup and tool grinding wheels, saw gumming wheel and saw gumming attachment.

A recommended revision of the commercial standard for diamond core drill fittings has been accepted and will become effective for new production and clearance of existing stocks as of Aug. 15, according to the Bureau of Standards, Washington.





## Open-Hearth Executives Discuss Variety of Operating Problems

**D**ESPITE adverse business conditions, more than 150 steel department executives participated in the fifteenth semi-annual conference of the open-hearth committee of the American Institute of Mining and Metallurgical Engineers, held May 24 and 25 at the William Penn Hotel, Pittsburgh. It was the usual, active, informal discussion gathering, partaking largely of questions and answers in the form of a debate of the committee as a whole. Leo F. Reinartz, American Rolling Mill Co., Middletown, Ohio, chairman of the committee, presided.

The program included some 35 different topics, relating to operations, construction, quality, fuel and refractories. In addition there was an address by Dr. Henry D. Hibbard, Plainfield, N. J., author of a current series of articles in *THE IRON AGE*, who discussed the baffling problem of eliminating hydrogen. Dr. C. H. Herty, Jr., also contributed something from his latest researches, covering particularly the use of the FeO content of the open-hearth slag as a base check on quality, to serve as an indicator of the capabilities of the steel to meet specific requirements.

### Effects of Use of Scrap

Also contributed were results of analyses by the Battelle Memorial Institute, Columbus, Ohio, to ascertain the effects of the use of scrap, particularly automobile scrap, in relation to the residual metals commonly regarded as contaminating the steel. The question of the effect on open-hearth practice of the intermittent operation of blast furnaces was also considered and in this case Arthur G. McKee, Cleveland, was asked to express his views. The burden of his talk was that it is unavoidable in the intermittent operation not to get variations in the character of the output of the furnaces; that it is subjecting it to harsh treatment to run a furnace on one-half wind, putting its performance more or less out of balance. Yet he emphasized that such practices have at times marked British procedure and the industry abroad has been able to make satisfactory steel, and he observed that no inconsiderable amount of steel is made anyway from cold charges. His injunction was that we must go along the best we can, for after all the conditions which we now all deplore are temporary and we shall not have to continue to punish the blast furnace. He paid a tribute to the remarkable accuracy that had been attained in blast furnace operation with a highly dependable product.

The consensus of the few views which were expressed with regard to the use of molten iron from the in-

termittently operated stacks was that more skulls were produced, greater fluctuation in the silicon was experienced and more oil had to be consumed at the mixer. One open-hearth superintendent said that not in years had it ever been necessary to dump ladles at the furnaces to remove the skulls, while now it has to be done. In short the contention seemed to be that the iron definitely runs colder than when there is regular blast furnace operation.

### Production Costs Discussed

The topics touching on operations in the open-hearth department had to do with production costs under low operating schedules, with varying the personnel under these conditions, with tarring of molds, draft control furnace scoring, the composition of heat used in starting up afresh after a prolonged shutdown and with the use of pouring boxes or auxiliary ladles. In the matter of using tar, one procedure described is to wash the mold in water and then to dip in tar, with emphasis on keeping the tar clean. It was urged that tar high in benzol is likely to cause corner cracks in molds. The use of a vaporizer instead of a spray was also mentioned as a successful way of applying tar. Preference was expressed in some cases for graphite as a mold wash.

The discussion on life of slab molds brought out great divergence of experience which would be substantially impossible to summarize. It can perhaps be answered by saying that the nearer square a slab mold is the longer its life, as one observer more or less facetiously stated. For example, a mold of 20 x 40 in. section gave twice the life of one 10 x 40 in. Also while molds of 0.6 to 2.5 per cent manganese, or say 1.25 per cent, gave long life, it was pointed out that it was fully as important on mold life to minimize the time in which the ingot is left in the mold.

In the section of the program devoted to construction, some time was given to the experience with two-pass and three-pass checkers. As yet not much data appear to be available. It was asserted that a liberal well needs to be provided between the passes. Generally speaking, some economy claims were made, mostly in speeding up the furnace operation. There were those who preferred waste heat boilers to the multiple pass checkers.

### Life of the Front Wall

Another subject discussed was the life of the front wall. There was a great divergence of experience in the number of heats in the campaign of a front wall, ranging from 50 to as high as 210 in the case of a more or less special construction. Similar-

ly there was a wide range in the volume of brick needed for checkers for a 100-ton furnace, on which information had been requested in advance of the meeting. The replies ranged from about 28,500 of 9-in. equivalent checker brick to 125,000. The openings regarded most satisfactory were generally 10½ in.

A machine for granulating slag and for utilizing centrifugal action to separate from the slag proper iron bearing material otherwise wasted in the slag was described by E. E. Brosius, Pittsburgh. He acquired patent rights about three years ago of a Gelsenkirchen machine, and two have been erected in this country. Mr. Brosius discussed at some length the qualities and uses that have been made of the slag and exhibited samples to show the effective recovery through centrifugal action of the ferrous product from the slag. He pointed out the saving in this way of valuable parts of the slag of ferro-alloys. The machine discussed includes a revolving pot of 46 in. diameter rotated at 500 r.p.m., requiring probably not more than 10 hp. to operate and a water consumption for the spraying of the slag of less than 100 gal. per ton.

The group of questions relating to quality included one on the time required to get preliminary tests of the open-hearth bath. Out of this came the emphasis that in the case of high-carbon products it was necessary to cool on one side of the test specimen so that the other side would be soft enough to secure quickly the drillings necessary for testing. In the case of 3½ per cent nickel steel, the test specimen was submerged and then brought back to a cherry red, the test piece then being cooled on the one side and the drillings obtained on the opposite, all with the result that only 10 to 12 min. was required to get the drillings into the laboratory.

## Malleable Castings Output Off in April

WASHINGTON, May 31.—Orders for malleable castings in April were 17,630 tons, against 18,046 tons in March, according to reports received by the Bureau of the Census from 117 establishments. Production declined to 16,758 tons from 19,597 tons and shipments dropped to 18,328 tons from 21,337 tons.

Colorado Fuel & Iron Co. will spend \$100,000 in modernizing and overhauling its rail mill in the next few months. Employment for 300 men is assured while the work is in progress. The company has begun to manufacture ferromanganese in an effort to keep workers busy. It is also making a line of disinfectants and sheep dip from by-products of the coke plant.



# Russia Placing Steel Orders in England and Germany

**Soviet Buys 40,000 Tons of British Plates and Is Negotiating for Further Tonnage, Also with Germany**

**L**ONDON, ENGLAND, May 30 (By Cable).—The market tone has been improved by announcement that Russia has placed orders for 40,000 tons of British steel plates and that negotiations are proceeding for the purchase of large quantities of British sheets and other materials.

German negotiations with Russia have been renewed and a preliminary agreement has been reached for the sale of 125,000 tons of German rolled steel for shipment next fall. Russian negotiations with Spanish steel companies for the renewal of the Russian oil contract and the placing of large steel and ship orders in Spain have broken down, owing to financial difficulties.

The British Imports Advisory Board is believed to be considering an increase of duties on pig iron and certain classes of steel.

Continental steel prices are generally steady, with some works disinclined to grant further reductions. However, the market is still influenced by those plants which are anxious to replenish their order books. Belgium steel makers are proposing a further wage reduction of 5 per cent.

Tin plate is firmer. Welsh makers are more optimistic as the result of their success in achieving 100 per cent membership in the pooling plan. Second hands are offering tin plate as low as 14s. 6d. base, f.o.b. works port, for prompt shipment, but the makers are asking up to 15s. 6d. for production tin plate. The general demand is poor, but is expected to improve in view of the firmer attitude taken by makers.

Dorman Long & Associates, Ltd., China, has been formed to develop large scale engineering projects in China. The company comprises Dorman Long, Metropolitan-Vickers Electrical Co., Ltd., Babcock & Wilcox, Ltd., Beyer, Peacock & Co., Ltd., Callender's Cable & Construction Co., Ltd., John I. Thornycroft & Co., Ltd., Edgar Allen & Co., Ltd., and Tilbury Contracting & Dredging Co. The new company will not execute contracts, but will seek orders for its members.

The April output of pig iron in Russia amounted to 88 per cent of the scheduled program. The raw

## British Prices, f.o.b. United Kingdom

Ports	
Per Gross Ton	
Ferromanganese, export	£9 0s.
Billets, open-hearth...	5 7 6d to 5 12 6d
Black sheets, Japanese specifications	9 12 6
Tin plate, per base box	14 9 to 15 3
Steel bars, open-hearth	7 17½ to 8 7½
Beams, open-hearth	7 7½ to 7 17½
Channels, open-hearth	7 12½ to 8 2½
Angles, open-hearth	7 7½ to 7 17½
Black sheets, No. 24 gage	8 0 to 8 10
Galvanized sheets, No. 24 gage	9 5 to 9 7 6

## Continental Prices, f.o.b. Continental

Ports	
Per Metric Ton, Gold £ at \$4.86	
Billets, Thomas	£1 19s.
Wire rods, No. 5 BWG	4 10
Black sheets, No. 31 gage, Japanese	11 5
Steel bars, merchant	2 4
Beams, Thomas	2 3
Angles, Thomas, 4-in. and larger	2 3
Angles, small	2 5
Hoops and strip steel over 6-in. base	3 5
Wire, plain, No. 8	5 7½
Wire, barbed, 4-pt., No. 10 B.W.G.	8 15

steel output was 78 per cent and rolled steel 85 per cent.

## Pennsylvania Railroad to Obtain Loan Immediately

WASHINGTON, May 31.—The Pennsylvania Railroad will get \$5,000,000 tomorrow from the Reconstruction Finance Corporation as the first installment on a loan of \$27,500,000 with which to proceed with its 1932 program of electrification and terminal improvement work between New York and Washington. The loan was both approved and announced last Saturday by the Interstate Commerce Commission, following quickly upon the heels of a re-amended application by the Pennsylvania on Tuesday requesting that commission make the loan available beginning June 1 instead of Oct. 1, as had been previously provided by the commission.

The commission had conditionally approved the loan with the understanding that the Pennsylvania would endeavor to obtain \$27,500,00 for its immediate needs through banking channels. In its re-amended application the Pennsylvania recited the

impracticability of obtaining at a reasonable cost this sum at present through a public offering of securities. The railroad said it would undertake to raise this sum through banking and investment channels before the end of the present year, "provided business and financial conditions permit it to do so upon reasonable terms." The loan made by the Reconstruction Finance Corporation also calls for the acceptance of securities which previously were not included. It is reported objection had been made by the Pennsylvania to the requirement of the commission that certain gilt-edge securities be put up as collateral.

The granting of the loan under the revised plan is expected to result in quick release of orders for steel and other requirements for the electrification and terminal improvement project. If the Pennsylvania proceeds with its original 1932 program it will expend, in addition to \$27,500,000 just loaned, a similar amount to be obtained from banking channels and \$13,000,000 from its own funds.

Loans to be made by the Reconstruction Finance Corporation are divided into the following installments: June 1, \$5,000,000; July 1, \$9,000,000; Aug. 1, \$4,500,000; Sept. 1, \$4,000,000 and Oct. 1, \$5,000,000.

## Weirton Steel Co. Sponsors Golf Club

At Weirton, W. Va., on an elevated rolling plateau overlooking the Ohio River and the main works of the Weirton Steel Co., an 18-hole golf course established for the benefit of the residents of Weirton was officially opened recently. It is the conception of J. C. Williams, president, Weirton Steel Co., and Ernest T. Weir, chairman of the board. The J. C. Williams Country Club has been organized to operate the course, and officials and employees of the steel company and members of the community have already joined the club to the number of 193.

## Cupola Refractories to Be Simplified

A simplified practice recommendation for cupola refractories concerning sizes and varieties of cupola lining, one and two hole tap-out and slag hole blocks, was approved at a general conference of representatives of the industry at Detroit on May 3 under auspices of the division of simplified practice, Bureau of Standards. The recommendation will become effective upon receipt of the required degree of support of the industry, which is being circularized for formal approval.



# Machine-Made Steel House Envisioned as the Mass Product of the Future

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THE steel house is passing out of the experimental stage. This fact was demonstrated at the Small House Forum, held under the auspices of the American Institute of Steel Construction at the Engineering Societies Building, New York, May 24 and 25. The large and enthusiastic attendance, the imposing array of addresses and papers, the manifest enthusiasm of both speakers and listeners and the diversity of interests represented by those participating in the discussions made it clear that the steel dwelling is a lusty, vigorous child destined to grow to a strong and useful maturity.

Both President Hoover and Secretary of Commerce Lamont sent messages to the forum commending the purposes for which it was called. Secretary Lamont stressed the importance of opening the way for the building of better houses at lower cost so that the reappearance of the "jerry-built" dwelling might be prevented when residential construction revived. The success of the meeting was attested by the unanimous adoption of a resolution making the forum a permanent organization, with the next meeting scheduled for the coming autumn.

Steel makers, architects, builders and manufacturers of household accessories participated in the program. Phases of the problem that were discussed ranged from what has been actually done in solving technical difficulties, with particular reference to the numerous systems of construction that have been evolved, to matters of design, financing, insurance, merchandising and future trends.

In discussing the outlook for steel housing, Harvey Wiley Corbett, chairman of the architectural commission of the 1933 Chicago World's Fair and one of the architects of Rockefeller Center, New York, declared that industry is confronted with the problem of getting some new manufactured product that will stimulate mass demand. The market for automobiles, he said, is virtually saturated, and demand for radios is rapidly approaching the same condition. The small house is the next thing that great corporations will look into. The small dwelling can, and will, be produced on a machine-made basis, he stated, and this will mean improvement in design, arrangement, sanitation and construction and a reduction in cost.

Standardization will not prove an

## President Hoover's Message

PRESIDENT HOOVER sent the following message to T. J. Foster, chairman of the Small House Forum, called by the American Institute of Steel Construction:

"I will be obliged if you will express my cordial greetings to the forum on house construction and my appreciation of the value of such inter-industry conferences seeking cooperatively for practical means of carrying into practice the recommendations brought out by the President's Conference on Home Building and Home Ownership. In such conferences lies an opportunity to serve the country in a vital need for better housing, and also to help forward the enlargement of employment in several major industries."

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obstacle to the success of the mass-manufactured house, in his opinion. He pointed out that it had not proved such a deterrent in the renting of apartments. If people are in the Ford class they will have Ford houses. If they are in the Rolls Royce class they will have Rolls Royce houses. The ability of manufacturers to employ the ablest designers will insure a distinct improvement in the appearance of dwellings, Mr. Corbett asserted.

The house of the future must be envisioned as a unit of inclosed space, rather than as a home. The first step in civilization was to settle at one point and to cease to be nomadic, he stated. But the cycle seems to have turned and we are again becoming nomadic. The average individual does not want to tie himself to a fixed spot. The reason is economic. Inclosed space must be so built that it can be moved in part, so that its value is not entirely dependent on location.

Costs, he believed, will be largely in terms of weight, as is now the case with automobiles. The steel house of the future, in his opinion, will weigh only one-third what it does today.

Lower weight will mean reduced costs. Small housing, Mr. Corbett declared, will show progress identical with that of the automobile. The modern machine-made house will be a thing that people will demand. It will give rise to a new consuming industry that will pull us out of the depression.

Mr. Corbett's belief that the tendency will be toward a more economical use of steel in steel houses was concurred in by Fred T. Llewellyn, consulting engineer, United States Steel Corp., New York, who said that the steel frame in residences opens up a new field of design that structural engineers have not yet explored. Existing hand books are of no value to them, he said. The proper use of steel in houses will depend on materials other than steel used. In other words, if the steel frame is made self-supporting during construction, as in skyscraper erection, it will weigh four to eight times what it needs to.

## Large Corporations See Steel House as New Outlet

The steadily growing interest of large corporations in the small house was evidenced by the prominence of steel companies on the program. J. C. Shields, assistant general manager of sales, Carnegie Steel Co., pointed out that the steel industry has productive capacity considerably above normal demand and must look for new outlets to absorb the excess. He said that E. P. Thomas, vice-president in charge of sales, United States Steel Corp., had appointed a committee, made up of representatives of subsidiary companies, which has been investigating the possibilities of the steel house. Information has been assembled in convenient form for distribution among all the sales offices of the Steel Corporation, so that every salesman will be fully posted as to what has been accomplished so far, and will be in a position to take advantage of every opportunity to preach the gospel of steel home construction. Mr. Llewellyn supplemented this announcement by saying that the reports of the Corporation committee are being digested and that important conclusions arrived at will probably be released to industry at large next month.

The chances of interesting capital in economic housing are better today than ever before, Robert Tappan, architect, New York, told the conference. In view of the prevailing fear



complex, capital is interested in safety first and returns second.

#### Fifty-Seven Different Systems of Construction

The progress made in steel housing is exemplified by the numerous systems of construction that have been developed. Mr. Shields said that a total of 56 systems of construction contemplating the use of steel in some form had come to the attention of the Steel Corporation committee. Mr. Llewellyn later stated that the elapse of one day had disclosed the addition of another system, making a total of 57. Mr. Shields classified the systems from the standpoint of steel members used, as follows:

Group	Type of Steel Members Used
1	Rolled shapes as received from the mill.
2	Rolled shapes fabricated into members.
3	Sheets or strips formed into members (metal lumber).
4	Rolled shapes, sheets or strips fabricated into panel framing units.
5	Sheets or strips fabricated into panel filling units.
6	Miscellaneous.

The small house problem, in the view of H. H. Moss, Linde Air Products Co., New York, is two-fold: (1) to reach the middle classes; (2) to reach the working classes. Most of the pioneering in steel house construction, as recounted by speakers at the forum, has been in the building of middle class homes. G. H. Danforth, chief engineer, Jones & Laughlin Steel Corp., stated that some 3000 houses had been built with the use of J. & L. Junior steel beams in the past few years. He recounted the progress made in methods of construction, but said that one of the biggest difficulties to overcome in making steel houses commercially effective was the matter of costs. On one of the houses he described the steel frame cost about 5c. a lb. delivered, this being roughly divided into 1c. for drafting room expense, 2c. for material, 1c. for shop work and 1c. for overhead expense. In addition, there was a cost of ½c. a lb. for erection. The total cost, he said, is too high to permit steel frames to be sold on a price basis only. He said that welded house frames would reduce the drafting room and shop costs, but would increase the field expense, probably in an amount sufficient to offset the savings.

"We hope some time," he continued, "to be able to work out a scheme whereby plain material can be taken from a steel warehouse on a list to be given them by the builder, assembled into a house frame at the site of the building without the use of detailed drawings, and with no necessity for any shop work. Such a frame, I believe, is entirely possible and will be reached in the not far distant future. On account of the elimination of expense it would have a price appeal that is now lacking, and, hence, would have a more universal market than is the case at the present time."

Henry Dubin, architect, Chicago, described a steel frame house that he designed and built for himself. This structure departs from conventional design, having a flat roof and large window areas, and employing battle-deck plate construction for the floors.

D. F. Titus, Lincoln Electric Co., Cleveland, showed moving pictures of the erection of a steel house in Shaker Heights, Cleveland. The steel was delivered to the job cut to length and was welded together on the site. The steel erection required no other tools than squares, rope and welding equipment. The cost of the house was less than \$100 more than if wood had been employed for the framing.

P. E. Selby, Steel-Built Homes, Inc., Cleveland, stated that his organization had built 20 bolted steel-frame houses in the past four years. Recently it has welded steel frame sections in the shop and transported them to the job.

Harold P. Mueller, builder, Philadelphia, has constructed homes in which the application of steel has been limited to the construction of the first floor. J. & L. Junior floor beams have been used for this purpose and have been filled in with reinforced concrete, which is later coated with mastic and covered with oak flooring.

R. P. Hutchinson, president, Bethlehem Fabricators, Inc., Bethlehem, Pa., described an all-steel duplex house that he had erected in his city.

#### Development of Shop-Built Panels

The development of shop-built sections or panels to supplement steel framing or to perform the double function of an inclosing and a structural member was outlined by other speakers. T. J. Foster, chairman, National Bridge Works, Long Island City, N. Y., outlined his method of construction which employs aerated, cast gypsum wall, partition and roof slabs in conjunction with a steel frame. A detailed description of this system appeared in THE IRON AGE of May 26, page 1160. H. W. Brown Housing Co., Waverly, Mass., told of the system developed by his organization. Originally wood studding was built into the frame-work between the structural steel members. Now whole wall units, with windows and doors built in, are assembled in the shop and fitted into the steel frame work on the job. D. E. McAvoy, builder, New York, described the manufacture and assembly of wall units for portable houses. The structural material in this case is Celotex. Two sheets of Celotex are assembled with a wood stiffener between them and a strip steel binding on the edges. Machine work insures accuracy of dimensions so that the panels fit tightly when bolted together on the job. Walls, partitions and roof are made of these units. Corner supports of the houses are structural steel angles. Windows are built into the panels at the factory.

Mr. McAvoy's product is frankly a

portable house but is the closest approach to the mass manufactured building envisioned by Mr. Corbett among all the structures described at the conference. Another type of house that is being developed with the purpose of reaching the lower income groups is the frameless sheet-steel dwelling devised by the Insulated Steel Floor & Wall Co., Cleveland, an organization jointly owned by Mills G. Clark, Cleveland, and the American Rolling Mill Co., Middletown, Ohio. This type of house, which employs sheets in box-like corrugations for both inclosing and structural purposes, was described in THE IRON AGE of Feb. 18, page 439. In referring to this system, Bennett Chapple, vice-president, American Rolling Mill Co., said that a house of this type was being built at the Chicago World's Fair. This structure will include a garage, will be fireproof, vermin-proof and insulated, and will be built at a cost of \$5,000. Mr. Chapple stressed the need of keeping costs down, pointing out that average income in this country is \$1,300 annually.

#### Financing Must Be Perfected

Financing must be perfected to make mass production of houses possible. The present system of appraising property and lending money on it came in for considerable criticism. Mr. Tappan called second mortgage discounts a sinful waste of the American's hard earned dollar. He said that the American workman could not be blamed for buying a car in preference to a home when he was forced to pay as much as \$6,500 for a \$5,000 house. Mr. Selby was of the opinion that long-term financing at reasonable rates could be arranged for in the case of the steel-frame house where obsolescence is not great. Mr. McAvoy declared that there is need for homes selling at \$3,500 to \$4,600, with 15-year financing—15 per cent down as the initial payment and regular monthly amortization installments.

The record of the forum discussions, as well as supplementary material that may be sent in by mail, will be studied by a committee, which will make a report, probably before the next meeting. In appealing for aid to the committee, T. J. Foster said:

"If you do your duty and the committee does its duty, we shall give birth to a new industry and make it possible for all to have decent living conditions—something that is not possible now."

Members of the committee follow: D. Everett Waid, architect, 1 Madison Avenue, New York; Fred T. Llewellyn, consulting engineer, United States Steel Corp., 71 Broadway, New York; Andrew J. Eken, Starrrett Brothers & Eken, 350 Fifth Avenue, New York; H. H. Murdock, Jardine, Murdock & Wright, 347 Madison Avenue, New York; Mrs. Christine Frederick, household efficiency engineer, Greenlawn, L. I., N. Y.



## Porcelain Enameled Steel Is Held to Have Great Outlet in Building Work

THE architectural field will provide a large outlet for porcelain enameled steel in the opinion of speakers at the second annual meeting of the Porcelain Enamel Institute held at the Hotel Cleveland, Cleveland, May 26. This is a field, the speakers pointed out, in which enameled material has only recently started to make an entrance. The advantages of vitreous enameled steel because of its utilitarian qualities, durability and the color effects that may be obtained and the ease with which it may be kept clean when used in building work were stressed. New uses for porcelain enamel in making various household equipment and for interior decorations were suggested.

In a talk on the use of porcelain enamel in the home Bennett Chapple, American Rolling Mill Co., appeared very optimistic over the possibilities of new uses of enamel products. Among the possible new uses he mentioned doors, mantles, hall trees, hat racks, radiator covers, floor lamps, lighting fixtures, book shelves, smoking stands, radio cabinets, beds, dressers, urns and flower boxes. Architects, he said, are showing much interest in vitreous enamel and he predicted that enormous business will be developed in the use of this material in the building field. Its use, he believed, has wide possibilities in the construction of low-priced houses.

There is a great opportunity to produce effects that are distinctive in ornaments, panels and friezes made of vitreous enamel steel, declared Charles B. Rowley, Cleveland architect, in a talk on the use of porcelain enamel for exterior building purposes. Mr. Rowley is the architect for a porcelain enamel covered house that is now being built in Cleveland. Pleasing outside color effects, he said, can be secured by using porcelain enamel shingles, outside covering and spandrels. One field for porcelain enamel construction which he regarded as promising is the building of subway stations. He contended that it is a mistake when using porcelain enamel to imitate marble or other products. The enameler, he said, has a product which it is not necessary to make in imitation of any other products. Makers should get together and agree on colors so that there will be a proper blending of colors used in a room.

### Color Is Strong Selling Point

The colors made available by porcelain enamel have been a distinct factor in its increased use, R. G. Cowan, Ferro Enamel Corp., Cleveland, declared in a talk on porcelain enamel's part in the use of color for decoration. A start is now being made, he said, in

the intelligent use of color. He had noticed a lack of cooperation between industries making enamel products and suggested that makers of porcelain enamel kitchen equipment and of other porcelain enamel products that go in a home cooperate in selection of colors for these products. Products today, he said, are sold more largely on their looks than because of any other feature and the tendency in that direction is growing. Green is in vogue now, but people will get tired of it and he believed that soft blue will be the next popular color. Cold gray is disappearing and in his opinion should be eliminated.

Views were expressed in the discussion that it would be of advantage to the manufacturers of porcelain enamel to reduce the number of colors used for enamel work. This would tend to eliminate waste. Suggestions were made that members of the institute might join with the stove manufacturers and confine their products to three or four colors and that they might follow the steps taken by the manufacturers of sanitary ware and take up the matter of reduction in the number of colors with the Department of Commerce. Mr. Cowan suggested that waste effort might be eliminated by having an ensemble color scheme for refrigerators, cabinets, stoves and other kitchen equipment.

Porcelain enamel is adaptable for sculptural effects and for permanent color effects, its field for usefulness in providing color effects being almost unlimited, declared William Hogen-son, Chicago Vitreous Enamel Products Co., in a paper on the use of friezes in modern architecture. Enameled cast iron as well as stamped metal may be used for friezes and other sculptural effects he said. That modern architecture demands color was emphasized by Mr. Cowan, who declared that the use of enameled cast iron offers far reaching possibilities for decorative work for buildings and in making decorative garden fixtures.

### Can Be Used for Facing Buildings

A recently developed porcelain enamel building unit for facing buildings and for interior use was described by W. Russell Greer, Porcelain Enamel Mfg. Co., Baltimore, in a talk on spandrels and mullions of porcelain enamel for architecture. After the sheets are formed and enameled they are given a concrete backing and in this form are delivered on the job. The backing serves as insulation and fireproofing and the combination of the two materials is said to have various advantages in construction as compared with the use of metal sheets without the backing.

What the institute is doing to further the use of porcelain enamel was outlined by George P. MacKnight, publicity director of the institute, which has shown a steady growth since its organization and now has 56 members.

Rudolf W. Staud, Benjamin Electric Mfg. Co., Chicago, was elected president, succeeding R. A. Weaver, Ferro Enamel Corp., Cleveland. Other officers elected were Bennett Chapple and W. R. Greer, vice-presidents; William Hogen-son, treasurer, and G. P. MacKnight, executive secretary. Mr. Weaver and R. D. Landrum, Cleveland, were reelected to the executive committee.

## Fabricated Structural Steel Not Gaining

WASHINGTON, May 31.—Fabricated structural steel bookings in April, reported to the Bureau of the Census by 259 plants, totaled 58,000 tons, as against 59,382 tons in March reported by 267 establishments.

Tonnages reported in the first four months of 1932 are 219,585, against 731,762 in the corresponding period of 1931.

Estimated bookings in April and in March are identical, 64,400 tons. Estimated bookings in the first four months of the current year are 239,200 tons, compared with 780,400 tons in the corresponding period of last year.

## Automobile Production 148,013 Units in April

WASHINGTON, May 31.—Production of motor vehicles in the United States in April rose to 148,013 units from 118,959 in March, according to reports received by the Bureau of the Census. The passenger car output increased to 120,841 from 99,325, while the truck production increased to 27,141 from 19,560.

## April Coke Production Lowest Since September

Coke production in April, at 1,939,391 net tons, was the lowest for any month since September, 1921, and was about 40 per cent less than the total output in March. By-product coke production in April amounted to 1,883,391 tons, a decline of 6.9 per cent in the average daily rate from that in March. Beehive coke output for April is estimated at 56,000 tons, or 33.5 per cent less than in the preceding month.



## British Railroads Favor Steel Ties

LONDON, ENGLAND. — A statement just issued by the British railroads indicates that the experiments conducted with steel ties during the past four years are regarded as so satisfactory that these ties may henceforth be used on a far larger scale.

Today there are nearly 500,000 laid in short length in different part of the country, where they are being subjected to searching tests. The principal technical difficulties are the inability to use steel ties on electrified or track-circuited lines and crossing work, and the reluctance to use them in tunnels and at water troughs until further experience is gained of their behavior. There is nothing, it is stated, which need stand in the way of extending their use in preference to importing wood ties, about 4,500,000 of which are used every year.

Apart from the initial increase in ballast used the cost of laying steel tie track is little above that for wooden track, and when reproducing steel track the initial charge would not be repeated. Maintenance costs are slightly lower. The outstanding consideration is the cost of subsequent renewal, the saving per mile for every year in which replacement of track can be deferred being about \$600. It is generally conceded that steel ties should give at least the maximum life of a creosoted lumber tie, about 22 years, and if it proves to be 30 years the renewal charges would be materially less, while the value of recoverable materials would be appreciably greater.

## Purchasing Agents Meet in Detroit, June 6-9

Economic planning will be the subject of a number of addresses at the seventeenth international convention of the National Association of Purchasing Agents at the Book-Cadillac, Detroit, June 6 to 9. Various phases of this subject will be presented by Wallace B. Donham, dean, and Prof. E. C. Robbins, Harvard University Graduate School of Business Administration; Charles F. Kettering, vice-president, General Motors Corp., and Donald G. Clark, purchasing agent, Brown & Sharpe Mfg. Co.

The association's national committees on iron and steel and coal, under respective chairmanship of W. W. MacMillen, director of purchases, National Malleable & Steel Casting Co., and Thomas W. Harris, Jr., division purchasing agent, E. I. du Pont de Nemours & Co., will hold a joint meeting to discuss the steel and coal situations. Opposing viewpoints on the question of modification of anti-trust laws will be presented at an informal session by Charles W. Dunn, lawyer,

New York; Abram F. Myers, formerly of the Federal Trade Commission, and Henry W. Beer, president, Federal Bar Association of New York, New Jersey and Connecticut.

## Prepare Training Course in Lubrication

The lubrication engineering committee of the Petroleum Division of the American Society of Mechanical Engineers has decided to prepare a course of instruction for the training of lubrication engineers.

This course will deal with application of lubricants to all classes of machinery. It will also explain the testing of machinery to determine if the most effective lubricants have been applied.

The report is being written and revised by experts in the petroleum and allied industries and is being reviewed by the chief lubrication engineers of the important lubricating oil companies. The report is in its last stages of preliminary writing and after its acceptance by the various trade associations will be made available through the society.

## Develops Machine for Casting Grave Vaults

In an effort to develop new products that will furnish an outlet for steel castings, the Machined Steel Casting Co., Alliance, Ohio, has brought out a machine for casting concrete grave vaults. The activities of the company's research department have recently been directed not only to the development of new products, but also to the designing of heavy mechanical equipment that would require considerable tonnage in castings.

The company has applied modern machine production methods to the manufacture of these vaults, which are now generally cast in built-up forms requiring a great deal of time and labor.

The principal parts of the machine are a one-piece inner form, a four-piece outer form, a lifting ring and a base, all of cast steel, a cast steel and channel upper frame, four guide posts of steel tubing, screws for raising and lowering the outer form and a motor and gearing for driving the screws. Three tons of steel castings are used in the machine.

Engineers of 18 nations are meeting in Milan, Italy, this week in an effort to secure international uniformity in standards for airplane and automobile parts, cutting tools, iron and steel and other subjects. The conferences, to extend through June 9, will be under the auspices of the International Standards Association.

## New Process for Sealing Porous Castings

A process for the reclamation of sweating or leaking castings, often regarded by foundrymen as a total loss, is announced by the Bakelite Corp., 247 Park Avenue, New York. Under the name Bakelite sealing solution, the company claims that its use for castings insures the production of parts fully the equivalent of castings that pass the most exacting inspection and test. The solution is applied by forcing it as a liquid into the pores of the casting and subsequently baking them in an oven so that the sealing solution reacts chemically. The solution is not relied upon to seal castings containing blow holes, sand holes or other decided defects.

## Chicago Museum Will Feature Metal Working

In developing the Museum of Science and Industry, Jackson Park, Chicago, the institution is having the help of an advisory committee of the American Institute of Mining and Metallurgical Engineers. Animation will be the keynote; machines, historic and modern, will be in operation.

Included in the exhibits will be a series of rooms covering the treatment of various metals, terminating in a large hall devoted to iron and steel. The center of this room will contain full-sized steel plant equipment, such as a Bessemer converter, the face of an open-hearth furnace, and ladles, ingot molds and cars, all in their natural setting. The remainder of the space will contain a complete model illustrating the steel-making process from the ore steamer to the rolled sections.

Other rooms will cover alloys, founding, forging, machine tools and materials testing.

The museum will be housed in what was the fine arts building of the Columbian Exposition of 1893. It will be opened in 1933 at the same time as the World's Fair now in process of construction at Chicago.

Linde Air Products Co., 30 East Forty-second Street, New York, has made substantial reductions in the prices of Oxweld welding and cutting blowpipes. One of the major items affected by this change is the Oxweld type W-17 welding blowpipe, which has a wide range of utility.

Moderate duty metal-clad switchgear using oil circuit breakers of oil-blast construction has been applied to outdoor service by the General Electric Co. This equipment is for use where no building or space is available.



# Abandonment of Gold Parity Would Not Wipe Out Excessive Internal Indebtedness

By DR. LIONEL D. EDIE

**T**HERE seems to be concern in some quarters about the ability of the United States to remain on the gold standard.

What is not commonly realized is that this country has, in a fundamental sense, been off the gold standard for a long time, without deliberate intent. What is a gold standard? A review of its history and of the philosophy back of it indicates that the purpose is to link currency and credit to gold in order to give stability to the whole financial structure.

The supply of gold itself is relatively stable over short periods of time. If the supply of currency and credit could in some more or less automatic way be anchored to gold, the presumption has been that the superstructure would gain substantially the same degree of stability as the foundation.

## Cannot Abandon What No Longer Exists

The Federal Reserve Act cut this automatic anchorage to such a degree that it destroyed the essence of the traditional gold standard. The people who had much to do with the framing of the Federal Reserve Act (e.g., Hon. Carter Glass, Dr. H. Parker Willis) evolved a philosophy of elasticity of credit. Whatever the intent, elasticity has in practice proved pretty much the Nemesis of the principle of the true gold standard. It has meant over-expansion by heavy rediscounting in boom times and over-contraction by wiping out rediscounts in bad times.

The elasticity scheme killed the gold standard, if we think of that standard in terms of its primary function, i.e., as a basic regulator of supply.

We cannot abandon a gold standard which no longer exists. What people mean nowadays when they talk about abandonment is simply to discontinue gold parity, either parity in foreign exchange or parity in redemption of domestic currency.

The popular train of thought is about as follows: The national budget is unbalanced. This will destroy confidence. Foreigners will withdraw gold and there will be a flight of domestic capital to a point where an embargo must be placed on gold ex-

ports. Also, loss of confidence at home will place such an internal strain on gold that a suspension of specie payments will be necessary. Thereupon, according to this popular conception, the dollar will go to a discount.

## The English Parallel Is Misleading

This loose popular notion is derived particularly from the experience of England last autumn. It is more or less assumed that this country could follow the English model. But the parallel is apt to be misleading. The foreign drain on England arose largely from the fact that London was a repository for the gold exchange standard of many outside countries. Moreover, the domestic commodity price scale of England was probably high relative to the world scale, a relationship not true of the United States at the present time.

Consequently, when the pound slipped from parity, it slipped sharply and is today at a discount of about 25 per cent. This has enabled England to pay off external sterling obligations at great advantage to herself. If the United States were to be forced off gold, a fair guess is that the dollar would not go to a discount of more than 10 per cent. Our domestic price level is not seriously out of line with the world level and I doubt if the dollar would have anything like the degree of depreciation which occurred in the pound.

## Abandoning Gold Parity of Little Help to American Debtors

This would not do us any great good on external obligations, because those are not our main problems. Internally, a discount on the dollar would not be of much benefit to the debtor class. A large part of our domestic debt contains the gold clause. If this is binding, the debtor has to pay in gold anyway. But suppose it is not binding. (I think the chances are fairly good that it would be nullified by new test cases in the courts.) In that event, the debtor has no marked advantage from paying in a dollar depreciated 10 per cent. He would gain advantage only if there were to be a large inflation of currency and credit. England has demonstrated that merely to abandon gold parity is not automatically to inflate the domestic price

level. Inflation is an additional step. If we think that by letting the dollar go to a discount we are solving the debt burden of the United States we are victims of a delusion.

## How to Meet the Debt Burden of the United States

The main problem in this country is how to meet the burden of debt, public and private, which has grown up since 1913. According to some estimates which I have made, our long and short term debt in the United States stands today at about \$185,000,000,000. This is more than three times our debt burden in 1913, although our national income has probably shrunk to near the 1913 level.

Merely to balance the national budget will not clear off this excessive debt burden. Merely to abandon gold parity will not clear it off. There are two ways to do the job. One is to scale down capital structures, reorganize companies, go through defaults and receiverships, and practice extreme economy and retrenchment, meanwhile balancing the national budget and defending the reserve base by the recently adopted Federal Reserve policy. The other is to go in for a substantial inflation of currency and of credit, an unadulterated and uncamouflaged dilution of the money of the country.

The latter policy is dangerous and the writer believes it is unwise. Whether we shall escape it is unknown, because the bitter-end deflationists have carried the pendulum so far in one direction that a swing back to the opposite extreme may be unavoidable.

The former policy starts with a real move to balance the national budget and a central bank policy which maintains reasonable excess reserves while the readjustment is taking place. On this foundation the problem is to scale down the capital structure quickly rather than to prolong the agony. Willingness to face this surgical operation is not yet evident.

These are the real issues and whether or not gold parity is exactly maintained is a relatively minor question. We should genuinely endeavor to maintain gold parity. A dollar depreciation of 10 per cent would not be of any particular value and would



leave the real debt burden about where it is today.

The acute apprehension over the gold parity, which many people now entertain, is a sign of lack of understanding of the basic problems at stake.

#### Common Sense Needed

We still have more than \$4,000,000,000 of gold in this country. If we were to lose some of it to England, the world would enjoy some benefit from the redistribution. England did not have half the frenzy during her gold crisis which the American people exhibit today, even though England's gold stock was a mere fraction of our colossal stock. England is not hoarding gold. The only people who are hoarding gold are a few American people of means and the French peasant.

The problem, then, is a problem in shouldering a national debt burden. Abandoning gold parity will not help materially. *Either we go the primrose path of currency inflation or we take the disciplinary path of a balanced budget, an aggressive Federal Reserve policy, and a surgical operation on top-heavy capitalizations. I believe we can and shall try harder than hitherto to follow the latter course.*

### Marked Gain in Orders for Gray Iron Castings

New business taken by gray iron foundries in April showed an increase of nearly 50 per cent over that of March, according to the monthly report of the Gray Iron Institute. There was also an increase in unfilled orders. Production was slightly below that of March. New business was 44.6 per cent of the normal production as compared with 30.4 per cent in March. Unfilled orders were 32.5 per cent as against 28.6 per cent the previous month. Production, which was 37.1 per cent in March, declined to 36.8 per cent.

In production by districts, the Chicago district reported 41.4 per cent of normal production in March, or the same as in April. Wisconsin, Illinois and the district west of the Mississippi River reported 40.3 per cent, compared with 40.1 per cent in March. Pennsylvania, Michigan, Ohio and Indiana and the southeast of the Mississippi River operated at 37.7 per cent of normal, compared with 36.7 per cent the previous month, and the Eastern territory, including New England, New York, and New Jersey, operated at 30 per cent as against 34.1 per cent in March.

Wickwire Spencer Steel Corp. has been licensed to manufacture preformed wire rope under American Cable Co.'s patents.

## Campaign Against Foreign-made Reinforcing Bars Intensified

**C**ONTENDING that competition from importers of foreign steel menaces the established business of responsible fabricators, the Concrete Reinforcing Steel Institute has decided to intensify its campaign against the use of foreign-made reinforcing bars along the Eastern seaboard.

Organized cooperation in the recent past has accomplished highly satisfactory results in decreasing the use of imported bars. The methods of approach are by the education of specifying authorities and by the investigation of specific jobs to prevent misrepresentation of foreign steel as a domestic product. At one locality the institute points to approximately 3000 tons of reinforcing bars which have been awarded to institute members and American mills during the last six months because of organized group activity.

The Federal Trade Commission has approved the ruling which brands misrepresentation as an unfair method of doing business in the reinforcing steel industry. In an experimental laboratory building at Annapolis, Md., about 60 per cent of the bars furnished were found to be of foreign manufacture. Upon confirmation of the first inspection, the foreign steel was rejected and ordered removed from the construction project. Because the foreign steel fabricator had stated in writing that domestic steel was being furnished on this project he was later found guilty of misrepresentation under the rules adopted by the Federal Trade Practice Conference. Misrepresentation in this case was a costly matter for the foreign steel distributor because a considerable portion of the fabricated steel was unfit for further use after rejection.

#### Educational Work Proposed

It is being proposed by the institute that the local groups along the Eastern seaboard organize to carry on educational work against the use of foreign steel and to prevent the misrepresentation of such material as a domestic product. This campaign is to include such cities as Boston, New York (including the New York and New Jersey metropolitan territories), Philadelphia, Baltimore, Washington and Richmond. It is proposed that the names of all competent local, municipal, county, State and private specifiers shall be listed. Members of the local group and also the institute will then communicate directly with these specifiers recommending that they require domestic reinforcing steel on all current and forthcoming

projects. Also, an institute member will be designated to make an individual personal call upon each specifier.

#### Foreign Bars Must Be Marked

The United States commissioner of customs has ruled that effective June 13 all imported reinforcing bars must be marked conspicuously with the full name of the country of origin rolled into the bar as permanently as possible. Such marking will probably take somewhat the form of the American mill marking system. In the meantime, foreign steel may be identified by the existence of what are apparently secret mill marks rolled integral with the bar, at or between deformations. All unmarked American and foreign steel is to be tested and the origin ascertained before it is approved as an American new billet product. Eastern institute members are familiar with the proposed quality mark -N-. Within the next few months it is to be expected that this identification will appear upon all domestic bars from mills whose steel the institute can guarantee as being a new billet product.

Experience has shown that where the origin of steel is investigated the use of foreign or off-quality domestic steel can be discouraged. The best method of such investigation is the requirement of a specific form such as that used by New York State. This calls for the name of the manufacturer of the billet and the heat number.

A recommended specification is to be offered to engineers and architects for use in preventing use of foreign or off-quality domestic steel under improper presentation. Most foreign reinforcing steel is made by the basic Bessemer process and hence is excluded by the open-hearth clause in the specification as well as by the domestic steel requirement.

#### Fabricators' Business Menaced

The institute finds in conclusion that competition from imported or foreign steel menaces the established business of reputable fabricators. Likewise, imports of reinforcing steel are making it difficult to secure profit on any bar orders taken at coastal points. Each ton of foreign steel imported by non-members of the institute decreases the gross revenue of the members by \$10. It also decreases the railroad revenue by about \$6 and decreases gross mill business by about \$30. Further, the importation of foreign steel deprives the American workman of much needed labor, the institute declares.



# OFF THE ASSEMBLY LINE



## Ford Output in June Now Expected to Total About 110,000 Cars

DETROIT, May 31.

**A**TENTION in automotive circles continues to focus on the surprisingly rapid expansion of production by the Ford Motor Co., which is now manufacturing about 4500 units five days a week, with prospects of a still higher rate before the end of this week. In sharp contrast with its experience with model A, when it took eight months to get output up to the 100,000 mark, Ford is planning on turning out about 110,000 cars during June, which will be the fourth month of operations on the eight and improved four.

Ford has shown amazing speed in accelerating work at its Rouge plant. Within little more than a week, production was increased 1000 units a day. Total output during May is estimated at 75,000 cars, or almost double the original schedule, of which 25,000 were V-eights. Sixty-five thousand cars were built for the domestic market, 7000 for export and 3000 for Ford of Canada. Ford is reported to have on hand orders for 310,000 cars and, despite the heavy gain in operations, retail sales are sufficiently brisk to enable the company to maintain without diminution this comfortable backlog.

For the first time in more than a year, Ford's releases of steel are amounting to a steady flow, perhaps not spectacular in volume, but sufficient in the aggregate to provide mills in the Detroit and Cleveland districts as well as those at more distant points with good tonnages. So long as Ford activities are expanding so rapidly and schedules are being constantly revised upward, this steady flow of steel orders may be expected instead of a large-tonnage buy on the part of the Ford company. When the manufacturing program is adjusted on to a more stable basis, regular monthly purchases will be resumed. Ford continues to operate six open-hearth furnaces, including the 400-ton

Ford estimated to have made 75,000 cars in May, of which 25,000 were V-eights.

\* \* \*

Ford will build about 110,000 cars in June, or half of the industry's output.

\* \* \*

Parts manufacturer perfects three-dimensional wheel made from a single steel stamping.

▼▼▼

furnace. One blast furnace is running; the rebuilding of the other furnace is about finished.

### Ford Orders Aiding Parts Makers

Parts suppliers are feeling the stimulating effects of Ford expansion, now that the bank of accumulated parts has been eaten into rather severely. Murray and Briggs are said to be turning out bodies in larger volume and Kelsey-Hayes is busier on Ford wheels. Murray has made over 22,000 Ford frames in the past two weeks at its Ecorse plant. Most of these are for shipment to domestic branch assembly plants, but some are for Ford of Canada and others for delivery to the Dagenham, England, factory, where work has not yet reached the stage that frame requirements can be handled without recourse to outside sources. Incidentally, Murray is furnishing half of Ford's passenger frames, the other half being built at the Rouge plant. Murray and Midland Steel Products are dividing the Ford truck frame business. When Ford is making 100,000 cars a month, as it will next month, Murray and Ford together will use about 700 tons of strip steel a day for frames, practically all of which is supplied by one steel mill. A considerable portion of the side rail for the Ford frame is exposed on the car and therefore for

this job it was necessary to develop hot-rolled strip steel with almost as high a finish as cold-rolled stock.

### May Buy New Equipment

Ford is the best prospective customer of the steel industry and equipment makers in the immediate future. Ford engineers are now busy devising ways and means of cutting production costs on the new cars and it is expected that many economies will take the form of new special machine tools and other mechanical devices which will make considerable savings by eliminating unnecessary manufacturing steps and reducing processing time.

For the first time in a year, Ford is beginning to cut into the business of its competitors. With a May production of about 55,000 cars, Chevrolet is said to be planning on somewhat lessened volume in June, although earlier indications pointed to sustained operations in the next 30 days. Plymouth likewise is reported headed downward, but its output will not be far below its May figure of 25,000 cars. Studebaker assembled about 5000 cars in May, of which 3000 were Rocknes; its June schedule calls for a reduction. A progressive decline appears in order during June for almost all other companies. The paralysis gripping the medium and high-price markets seems to be tightening rather than relaxing.

### Peak May Come in June

Increased Ford production in June is expected to more than offset decreases by other makers so that the next 30 days should see the automobile industry at its year's peak. May assemblies are believed to have been 195,000 to 200,000 cars, and June should be well over 200,000 units. Ford will make close to half of the industry's output the coming month.

Fisher Body Corp'n. is understood to be moving by truck quantities of



sheet steel from its Pontiac, Mich., plant, where it had anticipated using this stock for Pontiac bodies, to its Cleveland plant, where Chevrolet bodies are produced. What General Motors intends doing at Pontiac is not yet known, but if a new car is put on the market it is believed that it will be made in that city. Hudson has placed orders for steel for the first 800 of its new small cars, the production of which will start soon.

#### New Type of Steel Wheel

The Budd Wheel Co. has begun the manufacture of a three-dimensional wheel made from a single steel stamping, which is regarded as the first radical change in wheel design in years. As light as a wire wheel, possessing great strength and having not a single corner or crevice, this wheel has been made possible largely through employment of the company's process of tapering steel, which is done cold and which produces an improved quality of steel and a superior surface for painting. So strong is the metal that even the spoke ends are closed in from the single stamping to allow for riveting or welding to the rim.

### Coming Meetings

#### June

**Associated Machine Tool Dealers.** June 6 and 7. Spring convention, Granville Inn, Granville, Ohio. Harry Barney, Koppers Building, Pittsburgh, secretary.

**American Society of Mechanical Engineers.** June 6 to 8. National aeronautic and process meetings, Hotel Statler, Buffalo. June 23 to 25. Second national meeting of applied mechanics division, Yale University, New Haven, Conn. June 27 to July 1. Semi-annual meeting, Bigwin Inn, Lake of Bays, Ontario, Canada. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

**National Association of Purchasing Agents.** June 6 to 9. Seventeenth international conference and industrial exhibit, Book-Cadillac Hotel, Detroit. George A. Renard, 11 Park Place, New York, secretary.

**Society of Automotive Engineers.** June 12 to 17. Summer meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. John A. C. Warner, 29 West Thirty-ninth Street, New York, secretary.

**American Society for Testing Materials.** June 20 to 24. Annual convention, Atlantic City, N. J. C. L. Warwick, 1315 Spruce Street, Philadelphia, secretary.

**Association of Iron and Steel Electrical Engineers.** June 20 to 23. Annual meeting, William Penn Hotel, Pittsburgh. J. F. Kelly, 1010 Empire Building, Pittsburgh, managing director.

Goodyear Zeppelin Corp., Akron, Ohio, has awarded a contract for a new blimp dock to be built near Chicago to house the ship Columbia, which will be employed by Goodyear for observation flights over the World's Fair grounds at the Lake front and for aerial tours over Chicago. The Austin Co., Cleveland, will erect the structure, which will require 130 tons of structural steel. The steel framework will be covered with corrugated copper bearing steel.

## PERSONALS



CHARLES L. WOOD

CHARLES L. WOOD, who has been elected vice-president in charge of sales for United States Steel Corporation, with headquarters at 71 Broadway, New York, succeeding E. P. THOMAS, has been in charge of sales for the Carnegie Steel Co., Pittsburgh, since November, 1925. His experience in the steel industry dates back to 1898, and has been continuous with Steel Corporation subsidiaries and their predecessor companies. He was born at Columbus, Ohio, in 1873, and attended Ohio State University, Columbus, where he was graduated in mining engineering with the class of 1896. He worked for a time as chemist for the Calumet Furnace Co., Chicago, but later engaged in mining engineering work in Colorado. In 1898 he became identified with the American Steel Hoop Co., and was made manager of the order department when the company's headquarters were transferred to New York. When the Hoop company was consolidated with the Carnegie Steel Co. at the time of the formation of the United States Steel Corporation, Mr. Wood was transferred to the sales department of the Carnegie company. His record in the sales organization of the company's largest individual steel producing company has been one of constant progression. In 1918 he was made assistant general manager of sales in charge of the bar, hoop and band bureaus, having succeeded the late William G. Clyde in this position when the latter was made vice-president and general manager of sales. He was again to succeed to Mr. Clyde's duties in 1925 when the latter was made president of the Carnegie company, and Mr. Wood became general manager of sales. Mr. Wood was promoted to his recent position in June, 1930.

FRANK A. SPENCER, who has been identified for many years with the National Acme Co., Cleveland, has been appointed district manager of the Detroit territory, with offices at 2826 East Grand Boulevard.

♦ ♦ ♦

J. C. MILLER, who has been production engineer at the Lebanon, Pa., plant of the Bethlehem Steel Co., has been appointed manager of sales of bolts, nuts and rivets, with headquarters at Bethlehem, Pa., effective at once.

♦ ♦ ♦

BENJAMIN SCHWARTZ, director general, Institute of Scrap Iron and Steel, New York, has been elected to the executive committee of the Trade Association Executives in New York.

♦ ♦ ♦

R. H. SMITH, heretofore of the Boston office of the Reliance Electric & Engineering Co., Cleveland, has been made manager of the company's development engineering department, with headquarters in Cleveland. C. E. ROBINSON has been advanced to the managership of the Boston district office.

♦ ♦ ♦

WINSLOW SAMPSON, for many years associated with S.K.F. Industries, New York, has been appointed Pittsburgh district manager, with offices at 302 Penn Avenue, of the Kron Co., Bridgeport, Conn., maker of industrial scales.

♦ ♦ ♦

F. L. LINDEMUTH has been made chief engineer of the William B. Pollock Co., Youngstown. Mr. Lindemuth was formerly connected with the Mesta Machine Co., Perin & Marshall and with the Colorado Fuel & Iron Co.

♦ ♦ ♦

C. K. DAVIS, president of the Roessler & Hasslacher Chemical Co., Niagara Falls, N. Y., has been elected chairman of the board of the Pacific Roessler & Hasslacher Chemical Corp., and DR. E. A. RYKENBOER, vice-president of the parent company, has been elected president of the Pacific Coast subsidiary. F. S. PRATT has been made vice-president.

♦ ♦ ♦

ARTHUR W. F. GREEN, metallurgist, American Chain Co., York, Pa., has been elected chairman of the York chapter of the American Society for Steel Treating. The new vice-chairman is G. E. SHUBROOKS, engineer, Hamilton Watch Co., Lancaster, Pa.



CLEMENT V. MCKAIG has been appointed vice-president and general manager of sales of the Carnegie Steel Co., Pittsburgh, succeeding CHARLES L. WOOD. Since Feb. 1, 1930, he has been vice-president in charge of sales



C. V. MCKAIG

for the Great Lakes Steel Corp., Detroit, but in his new capacity he will return to the company in which he received the greater part of his training in the steel industry. He has spent the greater part of his life in Pittsburgh, and attended Princeton University following preliminary education in the former city. He began his career in the steel industry at Park works, Pittsburgh, of the Crucible Steel Co. of America, and had risen to the position of superintendent of bar mills when he left the company in 1908 to enter the bar department of the Carnegie Steel Co. After various promotions he succeeded the late I. W. Jenks as general manager of the bar and hoop department on April 1, 1929. In this capacity he had charge of production, design, engineering and marketing of the special bar mill products of the Carnegie company. In taking over the sales management of the Great Lakes company at the time of its inception, following his unique experience with the late Mr. Jenks, he was able to round out a varied career in the steel industry with intensive sales experience.

EDWARD B. ASHWORTH, superintendent of the forge department of the Bethlehem Shipbuilding Corp., Quincy, Mass., has been elected chairman of the Boston chapter of the American Society for Steel Treating. E. L. BARTHOLOMEW, metallurgist, United Shoe Machinery Corp., Beverly, Mass., has been made vice-chairman; HOWARD E. HANDY, metallurgist, Saco-Lowell Shops, Biddeford, Me., secretary-treasurer, and FRED-

ERICK P. FLAGG, chemist and metallurgist, Waltham Watch Co., Waltham, Mass., is chairman of the program committee.

HIBBARD S. GREENE has resigned as general sales manager, Chain Belt Co., Milwaukee, to engage in life insurance underwriting in Milwaukee. He formerly was vice-president, Barber-Green Co., Aurora, Ill., and is a director, Interstate Drop Forge Co., Milwaukee.

EDWARD T. FOSTER, for 32 years manager and treasurer of the Foster Machine Co., Westfield, Mass., on July 1 will resign. He will continue as a director and act in an advisory capacity.

CLARENCE E. WHITNEY, president of the Whitney Mfg. Co., Hartford, Conn., was the guest of the Employers' Association of Western Massachusetts at Springfield last week. He discussed present-day industrial problems.

WILLIAM J. MEINEL has been elected vice-president and general manager of the Heintz Mfg. Co., Philadelphia, maker of pressed metal products.

## OBITUARY

JULIAN KENNEDY, engineer and a leading authority on blast furnace and steel plant construction, died of a heart attack at his home in Pittsburgh on May 28, aged 80 years. During his long career in the iron and steel industry, to which he had contributed many inventions and improvements, he had been associated with nearly every important steel company in both America and Europe. He was awarded the Gary Memorial medal for conspicuous service to the steel industry at the meeting of the American Iron and Steel Institute, held in New York, May 19. A full account of his career was published last week on page 1198.

GEORGE WILLIS PAGE, vice-president in charge of purchases and a member of the board of W. A. Jones Foundry & Machine Co., Chicago, was killed May 29 when he fell from a second story window. He started with the Jones company 33 years ago in the capacity of shipping clerk. Mr. Page was 51 years old.

FREDERICK MCCLAIN, for many years chief engineer of the engineering firm of Julian Kennedy, Pittsburgh, died suddenly in London, England, on May 22. He was asso-

ciated with Mr. Kennedy from 1900 until the former's retirement at the end of 1927, and was widely known in the field of steel mill and blast furnace engineering.

JOSEPH OBERBERGER, founder and for many years president, Joseph Oberberger & Son Co., drop forge works, Milwaukee, died May 22, aged 78 years. He retired in 1913.

JAMES A. SEBASTIANI, one of the organizers of the Cincinnati Iron & Steel Co., Cincinnati, now a part of the Joseph T. Ryerson Sons, Inc., died at his home in that city on May 30, aged 77 years.

PERRY W. HARVEY, for years a director of M. A. Hanna Co., Cleveland, and former director of the Cleveland Folding Machine Co., died May 24 at his winter home near Thomasville, Ga., aged 63 years. He was a brother of A. F. Harvey, president, Pittsburgh Steamship Co., Cleveland.

WILLIAM JAMES AKIN died at his home at Evanston, Ill., on May 25, aged 78 years. Mr. Akin was vice-president and treasurer of the Illinois Malleable Iron Co. until his retirement three years ago. He had been with the company for 35 years.

## Hawley Bill Defeated in House Committee

WASHINGTON, May 31.—Voting 16 to 9, the House Committee on Ways and Means last Friday rejected the Hawley bill which proposed to equalize tariff duties by compensating for depreciated foreign currencies. The domestic steel industry, through the American Iron and Steel Institute and individuals, strongly supported the measure, as did numerous other American industries.

The vote against the bill was on a motion made by Representative Hawley of Oregon, author of the measure, asking that the bill be favorably reported to the House. It was defeated largely by a partisan vote, with Democrats opposing it and Republicans in favor of it. The committee is made up of 15 Democrats and 10 Republicans, one of whom is said to have voted against the Hawley motion.

Two amendments had been proposed to overcome objections to the bill in its original form, but they were also rejected. One would have exempted imports made under contracts before the countries of origin went off the gold standard. The other would have applied to free list products only when the American production was 7 per cent or more of domestic consumption.



## ... LETTERS TO THE EDITOR ...

### Rationalizing Steel Capacity

Editor, *The Iron Age*:

IN THE IRON AGE of May 19 the editorial "Mentor for Steel" suggests, among possible future changes, that the right development of the steel industry will call for regulation and concerted planning, in contrast with the haphazard way in which producing capacity has grown up to its present proportions.

That we have too much steel capacity is, of course, no depression discovery. We heard of it even before the World War, and in 1929 or 1930 Mr. Schwab, in one of his presidential addresses before the American Iron and Steel Institute, called for a "moratorium" on steel works construction, showing how excessively and unprofitably competitive the market had become because of the overbuilding of new plants.

The steel industry may need the highly competent adviser you suggest, who could call for the putting on of the brakes when new projects threatened to demoralize the market. From many directions, in these difficult days, proposals are coming for closer cooperation in all industries, when business starts again. But we are yet to find out whether such cooperation will be attended by less or more government control than we have had heretofore.

Significant in this connection are the views expressed by Justice Brandeis (and in which Justice Stone concurred) in the dissenting opinion he gave in a case decided by the Supreme Court at Washington on March 21 last. Under Oklahoma laws the New State Ice Co., Oklahoma City, had obtained a certificate of "public convenience and necessity" from the State Corporation Commission, had invested \$500,000 in a plant and for some years had been making ice. Without obtaining or seeking a license, Ernest A. Liebman started to build a plant of his own. The ice company brought suit to stop him. Liebman contended that ice making is a private business, that he had a constitutional right to engage in it, and that to require him to get a finding of public necessity deprived him of his constitutional right. He was sustained by the United States District Court and by the Circuit Court of Appeals. The Supreme Court affirmed these decisions.

There may be surprise that Justice Brandeis should stress the evils of unlimited competition, but his dissenting opinion shows an appreciation of conditions many industrial leaders have emphasized in asking a revision

of our anti-trust laws. I quote two paragraphs:

"Some thoughtful men of wide business experience insist that all projects for stabilization and proration must prove futile unless, in some way, the equivalent of the certificate of public convenience and necessity is made a prerequisite to embarking new capital in an industry in which the capacity already exceeds the production schedules. \* \* \*

"I cannot believe that the framers of the Fourteenth Amendment, or the States which ratified it, intended to leave us helpless to correct the evils of technological unemployment and excess productive capacity which the march of invention and discovery have entailed. There must be power in the States and the nation to remold through experimentation our economic practices and institutions to meet changing social and economic needs."

Had there existed a commission, either within or out of the steel industry—or even a referee such as you suggest—whose findings on the relation of supply and demand had weight, one can believe a good part of the overbuilding of steel capacity in the past decade might have been avoided. At all events, the growth of sentiments such as Justice Brandeis has expressed gives some hope for the future.

A. H. S.

### Measuring the Size of the Gray Iron Industry

Editor, *The Iron Age*:

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I do not believe that the consumption of foundry pig iron is a true criterion of the activity of the gray iron industry. In the first place, you show the increased use of malleable pig as an indication of malleable castings taking up the slack lost by gray iron. As a matter of fact much malleable pig is used in the gray iron industry, particularly in the motor castings field and also in the heavy engineering castings field, where a low silicon iron is desirable.

Another factor which would modify your conclusions would be the larger use of cast and steel scrap in the gray iron industry. A survey which we made last year of ninety foundry mixtures, coming from foundries all over the country, shows how much scrap is

salvaged before it gets back to the steel industry. Extracts from this report may be of interest:

1. "Metal for gears is generally made from mixes containing 10-40 per cent steel."

2. "Metal for hard wearing castings takes large proportions of scrap, either steel or low silicon iron."

3. "Soundness in flywheels is insured by the use of large proportions of steel and low silicon content."

4. "Metal for automobile castings contained from 45-60 per cent scrap and 0-17 per cent steel rail."

The average transverse strength of 800 A.S.T.M. arbitration bars made from the mixtures was:

Transverse strength, 2200 lb.  
Deflection, .26 in.

Since strength is from 700-200 lb. greater than the A.S.T.M. specifications for general castings—depending on whether light or heavy sections are considered—you can see that the physical properties have not suffered. In fact the proper use of scrap, and particularly steel scrap, goes hand in hand with the advances which gray iron foundry practice has shown in the past twenty-five years.

We feel that if the increased use of ferroalloys, silvery pig and nickel-chromium pig were taken into account, the situation would appear very differently.

ARTHUR J. TUSCANY, Manager,  
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### Buyers Want Price Stability

Editor, *The Iron Age*:

CERTAINLY every purchasing agent who reads the editorial "Metal Working Industry Awaits Market Leadership" in the issue of May 19 will thank you from the bottom of his heart. This applies not only to those who purchase metals and metal products. Practically all industries suffer today for want of the leadership the article calls for.

Just as a purchasing agent in normal negotiations must get the full benefit of the "most favored nation" clause, so that his concern will be on all fours with its competitors, so today he must recognize the situation as it exists and be able to show his superiors that he is capable under abnormal as well as normal conditions. The purchasing agent does not condone the practices of today; he simply realizes that a condition and not a theory confronts him. Every fair-minded buyer will heave a sigh of relief when stabilization of policy is again the fashion.

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# • • EDITORIAL COMMENT • •

## The Steel House Is Out of Its Swaddling Clothes

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The vitality of the steel house movement is attested by the fact that literally 57 different varieties of home construction employing steel have been developed. Moreover, the use of steel is no longer a matter of theory. Many steel houses have been built. Much of the grief that inevitably attends pioneering is now a thing of the past. But the money that was lost in early ventures and the unforeseen kinks that had to be straightened out in the practical carrying out of untried paper plans have proved fruitful investments. They have cleared the way of obstacles. They have made it possible to envision an early realization of what was only a dream a half dozen years ago.

The Small House Forum demonstrated that steel makers, manufacturers of household equipment, builders and architects are all alive to the very real opportunity now at hand to launch a new mass-production industry using steel as the basic material. Public dissatisfaction with "jerry" built houses has emphasized the desirability of a material that is warp-proof, shrink-proof, vermin-proof, fire-proof, strong and durable. It is true that costs must be brought down, but great progress has been made in that direction and the introduction of standardized wall, floor and roof units, fabricated in the shop, will drive them still lower. Accuracy in assembly is assured by the fact that the dimensions of steel members are unaffected by the weather, being free from vexing uncertainty as to "seasoning."

It would be foolhardy, of course, to expect a steel house industry comparable in size to the automobile industry to spring up overnight. Such miracles do not happen. It is only necessary to recall the many setbacks suffered in perfecting all time-tested products. The past 30 years have seen about 800 automobile manufacturers pass out of existence. The last decade has been a record of numerous failures in airplane ventures. Yet motor vehicle production is thoroughly established as a successful major industry, and aircraft manufacture is also rapidly "arriving." It is no accident that passenger, express and mail business handled by airplane showed an increase in revenues in 1931 when other forms of transportation suffered sharp declines in income.

The steel house likewise will come into its own. Shelter satisfies human needs as does nothing else save food and clothing. Factory-made steel houses will tap a mass demand that will far surpass the demand for automobiles.

## Employment Guarantees

SOME confusion of thought exists as to measures discussed for meeting the present emergency and those proposed for preventing the recurrence of a similar one. Take, for example, the matter of employment guarantees.

It is true that the feeling of insecurity on the part of the employee has been a large factor in causing him to curtail his expenditures; accounting, in the aggregate, for large total reduction in purchasing power through hoarding. This is entirely aside from the losses due to the progressive decimation of wages and wage earners which has taken place during the past two years.

It is equally true that some form of guarantee of minimum employment to employees by employers would offset the first of these evils to a large extent and cause a willingness to spend more freely of the wages earned. This, in effect, would be a depression preventive.

As a curative for present ills, however, no such guarantees are now practical. They will undoubtedly be offered as subjects for legislative enactment by those who believe or profess to believe in the miraculous self-replenishing powers of corporate treasuries. But no horse, however willing, can pull a greater load than his strength permits, and our business Dobbin is now loaded to the limit with emergency burdens, of which taxation comprises no small part.

Fires, floods and acts of God are exempted in the operation of all contract clauses. Whether the present situation fits into one of these three categories it would be hard to say. But it would be as difficult to define normal employment procedure during a depression of this magnitude as it would have been to compute proper local insurance rates while Rome was burning.

One of the surprises in industrial trends in 1931 was the continued upward swing in the production of electrolytic zinc. Statistics show that the proportion of this grade of zinc of the total American and world production reached the highest on record last year. In the United States the electrolytic zinc output was 27.31 per cent of the total while of the world production electrolytic was 32.74 per cent. Twelve years ago, or in 1920, the respective percentages were 10.56 and 7.91. When production of this grade of zinc was first called to attention, there were misgivings as to its competition with the retort grade, its cost, despite greater purity, was cited as a disadvantage. The test of time has brought with it some surprises, including reduction in cost. There has been a growing use of electrolytic zinc despite the world depression and there are indications that it will survive the depression in a stronger position than ever.



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# Iron and Steel Imports in April Led by Pig Iron and Tin Plate

WASHINGTON, May 24.—Rising sharply to 4151 gross tons, imports of tin plate constituted the largest item of finished steel received from abroad in April, whose total incoming movement was 36,339 tons, a decline of 11.4 per cent from that of March. The only tonnage outranking tin plate

in volume was pig iron, with a total of 9848 tons. Incoming shipments of tin plate were exceeded by outgoing shipments by the slim margin of 309 ton. The April imports of tin plate compare with 2529 tons received in March and only 26 tons in February.

San Francisco again in April, as in March, was the principal port of tin

plate entries, receipts totaling 4012 tons, valued at \$261,253. This figures out at \$2.90 per base box of 100 lb., foreign port. Adding the duty \$1 per box, and allowing for an ocean rate of 25c. and a landing charge of 5c. per box, the landed cost at San Francisco becomes \$4.20 per base box. This (Concluded on advertising page 22)

## Imports of Iron and Steel Products into the United States

	(In Gross Tons)		Four Months Ended April	
	April		April	
	1932	1931	1932	1931
Pig iron.....	9,848	14,479	43,780	36,433
Sponge iron.....	.....	1	51	209
Ferromanganese and spiegeleisen*	2,510	2,253	8,304	11,448
Ferrochrome†	49	35	79	56
Ferrosilicon‡	.....	77	20	450
Other ferroalloys.....	289	201	539	610
Scrap.....	532	1,333	2,008	4,810
<b>Pig iron, ferroalloys and scrap.....</b>	<b>13,228</b>	<b>18,379</b>	<b>54,781</b>	<b>54,016</b>
Steel ingots, blooms, billets, etc.....	88	1,904	1,983	8,424
Wire rods.....	276	655	3,078	2,732
<b>Semi-finished steel.....</b>	<b>364</b>	<b>2,559</b>	<b>5,061</b>	<b>11,156</b>
Concrete reinforcement bars.....	2,650	4,934	11,452	14,925
Hollow bar and drill steel	78	142	260	474
Merchant steel bars.....	3,331	4,554	13,872	17,406
Iron slabs.....	.....	21	.....	21
Iron bars.....	76	88	234	304
Boiler and other plate.....	51	61	86	624
Sheets, skelp and saw plate.....	2,820	1,541	7,381	7,157
Tin plate.....	4,151	11	6,756	48
Structural shapes.....	3,154	6,538	12,390	24,596
Sheet piling.....	.....	266	.....	456
Rails and rail fastenings	685	2,544	1,160	3,406
Welded pipe.....	578	403	1,748	2,063
Other pipe.....	200	805	1,035	4,535
Barbed wire.....	1,390	499	5,666	2,033
Round iron and steel wire	223	265	813	1,023
Flat wire and strip steel	84	62	282	234
Wire rope and strand.....	202	209	616	701
Other wire.....	112	63	292	292
Hoops, bands, and staples.....	1,889	1,921	7,273	6,569
Nails, tacks and staples.....	995	508	3,522	2,347
Bolts, nuts and rivets.....	11	46	55	446
Other finished steel.....	2	1	27	22
<b>Rolled and finished steel</b>	<b>22,682</b>	<b>25,582</b>	<b>74,920</b>	<b>89,682</b>
Cast iron pipe and fittings	12	1,160	23	2,477
Castings and forgings.....	53	192	376	616
<b>Total.....</b>	<b>36,339</b>	<b>47,872</b>	<b>135,161</b>	<b>157,947</b>

\*Manganese content only.

†Chromium content only.

‡Silicon content only.

## United States Imports of Pig Iron by Countries of Shipment

	(In Gross Tons)		Four Months Ended April	
	April		April	
	1932	1931	1932	1931
United Kingdom.....	3,900	292	4,600	1,185
British India.....	3,564	11,499	15,372	26,925
Germany.....	.....	.....	135	.....
Netherlands.....	50	2,688	22,500	4,708
Canada.....	28	.....	138	.....
France.....	.....	.....	.....	25
Belgium.....	.....	.....	200	.....
Norway.....	.....	.....	.....	86
Sweden.....	156	.....	254	2,978
All others.....	150	.....	581	526
<b>Total.....</b>	<b>9,848</b>	<b>14,479</b>	<b>43,780</b>	<b>36,433</b>

## Exports of Iron and Steel from the United States

	(In Gross Tons)		Four Months Ended April	
	April		April	
	1932	1931	1932	1931
Pig iron.....	221	286	1,098	1,635
Ferromanganese.....	8	1	13	14
Scrap.....	19,047	15,667	48,758	52,775
<b>Pig iron, ferroalloys and scrap.....</b>	<b>19,276</b>	<b>15,954</b>	<b>49,869</b>	<b>54,424</b>
Ingots, blooms, billets, sheet bars.....	107	218	476	1,783
Skelp.....	954	3,603	6,776	23,822
Wire rods.....	1,178	3,239	7,487	13,495
<b>Semi-finished steel.....</b>	<b>2,239</b>	<b>7,060</b>	<b>14,739</b>	<b>39,100</b>
Steel bars.....	1,846	3,897	6,610	18,832
Alloy steel bars.....	76	291	673	1,945
Iron bars.....	43	87	154	339
Plates, iron and steel.....	1,653	5,112	4,727	19,032
Sheets, galvanized steel.....	2,425	4,435	10,058	15,545
Sheets, galvanized iron.....	141	333	547	2,485
Sheets, black steel.....	4,534	10,904	13,460	34,965
Sheets, black iron.....	501	1,382	1,242	3,055
Hoops, bands, strip steel	1,743	3,148	8,073	14,171
Tin plate;terne plate.....	4,460	8,753	14,483	31,736
Structural shapes, plain material.....	1,728	9,066	5,901	38,354
Structural material, fabricated.....	1,392	4,459	5,401	17,398
Tanks, steel.....	246	1,266	1,175	7,238
Steel rails.....	1,216	4,117	5,096	14,030
Rail fastenings, switches, frogs, etc.....	197	689	1,806	2,737
Boiler tubes.....	198	998	923	3,191
Casing and oil-line pipe.....	685	2,297	4,305	10,376
Pipe, black and galvanized, welded steel.....	2,938	4,020	9,784	15,764
Pipe, black and galvanized, welded iron.....	1,064	375	1,624	1,720
Plain wire.....	1,117	1,506	4,257	5,277
Barbed wire and woven wire fencing.....	2,293	2,639	7,522	10,041
Wire cloth and screening	68	84	210	334
Wire rope.....	141	279	632	1,075
Wire nails.....	781	810	3,074	3,019
Other nails and tacks.....	387	360	1,392	1,416
Horseshoes.....	1	3	28	11
Bolts, nuts, rivets and washers, except track.....	224	581	978	2,039
<b>Rolled and finished steel</b>	<b>32,098</b>	<b>71,891</b>	<b>114,135</b>	<b>276,125</b>
Cast iron pipe and fittings	3,010	2,570	4,307	6,550
Malleable iron screwed fittings.....	139	487	543	2,244
Car wheels and axles.....	306	716	1,171	2,753
Iron castings.....	235	464	657	2,001
Steel castings.....	111	189	473	1,790
Forgings.....	297	717	1,665	3,198
<b>Castings and forgings.....</b>	<b>4,098</b>	<b>5,143</b>	<b>8,816</b>	<b>18,536</b>
All other.....	407	786	1,638	2,829
<b>Total.....</b>	<b>58,118</b>	<b>100,834</b>	<b>189,197</b>	<b>391,014</b>

## Sources of American Imports of Iron Ore

	(In Gross Tons)		Four Months Ended April	
	April		April	
	1932	1931	1932	1931
Canada.....	80	.....	298	9
Cuba.....	22,000	11,500	55,000	23,000
Chile.....	21,652	86,612	131,884	347,925
Spain.....	.....	8,740	49	28,337
Sweden.....	7,037	7,329	7,037	37,223
French Africa.....	6,375	15,101	6,375	19,602
Russia.....	32,710	23,347	65,710	89,294
Other countries.....	599	10,023	35,729	30,749
<b>Total.....</b>	<b>90,453</b>	<b>162,652</b>	<b>202,082</b>	<b>576,139</b>



## SUMMARY OF THE WEEK'S BUSINESS

# Structural Steel Bookings of 31,000 Tons the Largest Since Last December

Ford Motor Co.'s Rapid Expansion of Output Also One of Brighter Spots in Situation—Ingot Output Lower

MILD improvement is in evidence in some steel products, but has not reached mill books in time to prevent another slight decline this week in ingot output to 23 per cent of the country's capacity, this lowered rate being partly brought about by the holiday.

Gains in orders are most noticeable in structural steel and tin plate. Structural steel lettings of 31,000 tons are the largest for any week since late December, and inquiries have appeared for 11,500 tons of new work. Tin plate operations are approaching a 50 per cent rate, following a few weeks at 45 per cent, and further improvement is in prospect for June.

While some private building work is appearing in the market, most of the structural steel tonnage is for public projects. Two of good size are an addition to the General Post Office, New York, requiring 12,000 tons, and the Department of Agriculture extensible building in Washington, calling for 10,000 tons. Work is to be begun within two weeks by Pennsylvania Railroad on its electrification project, and releases of about 60,000 tons of steel, which has been in suspension on mill books, are expected soon. A number of other large structural steel jobs are likely to be placed within a week or two.

The railroad equipment trade has been so bare of business that an order for 50 gondola cars for the Wheeling & Lake Erie and the request for bids on rebuilding 150 gondola cars for the Western Maryland are worthy of mention.

INTEREST in automobile prospects centers in the rapid expansion of output by the Ford Motor Co., which has now reached 4500 cars a day five days a week, with a prospect that this may be exceeded in a week. The Ford schedule for June contemplates production of 110,000 units. Ford's steel releases are in a steady flow, with Cleveland and Detroit sheet and strip mills getting the bulk of the business in those products, while Ford's own mills are supplying a considerable part of the bar requirements. Suppliers of parts are feeling the effects of Ford's expansion, as stocks made some time ago are being reduced.

In general, the steel industry's prospects for the summer months are reasonably promising when compared with the performance of recent months, providing the Congressional snarl over the tax bill and a balanced budget is quickly untangled and a sound program of Federal relief through the financing of self-liquidating construction projects is adopted. The auto-

mobile industry probably will reach its peak of production in June, but fairly good schedules may be maintained through July and August, particularly by Ford; the building program points toward some acceleration during the next few months, and tin plate rollings are likely to be somewhat higher during the summer months than they have been recently.

STEEL companies are turning their attention to the bolstering up of some weak spots that have developed in prices of alloy steel bars, automobile body sheets and cold-rolled strip steel. Concessions of as much as \$4 a ton have been granted on alloy steels to some large buyers, while automobile body sheets and cold-rolled strip have been shaded about \$1 a ton. Most of this weakness has developed in the Detroit district. On other products the steel companies are maintaining a firm price position.

Makers of wire products and bolts, nuts and rivets have reaffirmed present prices for the third quarter. Rail steel bars, which have been conspicuously low in price as compared with billet steel bars, have been advanced \$3 a ton. On most of the steel products, however, the mills have not opened their books for the third quarter and price announcements are still withheld. Advances on some grades of sheets and on strip steel seem to be almost certain, but the 1.60c. a lb., Pittsburgh, price on bars, shapes and plates probably will be continued into the next quarter. Efforts may be made to establish bar extras on a profitable basis. Quantity differentials on alloy bars and quality differentials on commercial forging billets may also be adopted.

Raw material prices are very weak, with further declines in many grades of scrap and a drop in furnace coke of 25c. a ton to \$2, Connellsville. Pig iron producers are showing signs of resistance to a further lowering of their prices. At Philadelphia, domestic makers are taking a firm stand at a minimum of \$14 for No. 2 foundry iron, although foreign competitive grades are available at 50c. a ton less. Pig iron prices at Chicago are still unsettled, but producers are endeavoring to maintain the price level at a \$16 base. A reduction in heavy melting steel scrap in eastern Pennsylvania brings THE IRON AGE composite price for that commodity down to \$7.33, a new low record for all time. THE IRON AGE composite prices for finished steel and pig iron are unchanged at 2.087c. a lb. for the former and \$14.06 a gross ton for the latter.



# ▲ ▲ ▲ A Comparison of Prices ▲ ▲ ▲

Market Prices at Date, and One Week, One Month and One Year Previous,  
Advances Over Past Week in Heavy Type, Declines in Italics

## Pig Iron

	May 31, 1932	May 24, 1932	May 3, 1932	June 2, 1931
<i>Per Gross Ton:</i>				
No. 2 fdy., Philadelphia.....	\$14.84	\$14.84	\$14.84	\$17.26
No. 2, Valley furnace.....	14.50	14.50	15.00	17.00
No. 2 Southern, Cin'tl.....	13.82	13.82	13.82	14.69
No. 2, Birmingham.....	11.00	11.00	11.00	12.00
No. 2 foundry, Chicago*.....	16.00	16.00	16.00	17.50
Basic, del'd eastern Pa.....	16.00	16.00	16.00	17.00
Basic, Valley furnace.....	14.00	14.00	14.50	15.50
Valley Bessemer, del'd P'gh..	16.89	16.89	17.39	18.76
Malleable, Chicago*.....	16.00	16.00	16.00	17.50
Malleable, Valley.....	15.00	15.00	15.50	17.00
L. S. charcoal, Chicago.....	23.17	23.17	23.17	25.04
Perromanganese, seab'd car- lots. (Larger quantities at discount.) .....	75.00	75.00	75.00	85.00

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

## Rails, Billets, etc.

<i>Per Gross Ton:</i>				
Rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	32.00	34.00	34.00	34.00
Rerolling billets, Pittsburgh..	27.00	27.00	27.00	29.00
Sheet bars, Pittsburgh.....	26.00	26.00	26.00	29.00
Slabs, Pittsburgh.....	27.00	27.00	27.00	29.00
Forging billets, Pittsburgh..	33.00	33.00	33.00	35.00
Wire rods, Pittsburgh.....	37.00	37.00	37.00	35.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb....	1.60	1.60	1.60	1.65

## Finished Steel

<i>Per Lb. to Large Buyers:</i>				
Bars, Pittsburgh.....	1.60	1.60	1.60	1.65
Bars, Chicago.....	1.70	1.70	1.70	1.70
Bars, Cleveland.....	1.65	1.65	1.65	1.65
Bars, New York.....	1.95	1.95	1.95	1.98
Tank plates, Pittsburgh.....	1.60	1.60	1.60	1.65
Tank plates, Chicago.....	1.70	1.70	1.70	1.70
Tank plates, New York.....	1.898	1.898	1.898	1.93
Structural shapes, Pittsburgh	1.60	1.60	1.60	1.65
Structural shapes, Chicago..	1.70	1.70	1.70	1.70
Structural shapes, New York	1.86775	1.86775	1.86775	1.90½
Cold-finished bars, Pittsburgh	1.70	1.70	2.00	2.10
Hot-rolled strips, Pittsburgh	1.40	1.40	1.40	1.55
Cold-rolled strips, Pittsburgh	2.00	2.00	2.00	2.15

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

## Finished Steel

<i>Per Lb. to Large Buyers:</i>				
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.20	2.20	2.20	2.15
Hot-rolled annealed sheets, No. 24, Chicago dist. mill..	2.30	2.30	2.30	2.35
Sheets, galv., No. 24, P'gh...	2.85	2.85	2.85	2.80
Sheets, galv., No. 24, Chicago dist. mill.....	2.95	2.95	2.95	2.90
Hot-rolled sheets, No. 10, P'gh	1.55	1.55	1.55	1.70
Hot-rolled sheets, No. 10, Chi- cago dist. mill.....	1.65	1.65	1.65	1.80
Wire nails, Pittsburgh.....	1.95	1.95	1.95	1.80
Wire nails, Chicago dist. mill	2.00	2.00	2.00	1.95
Plain wire, Pittsburgh.....	2.20	2.20	2.20	2.20
Plain wire, Chicago dist. mill	2.25	2.25	2.25	2.25
Barbed wire, galv., P'gh.....	2.60	2.60	2.60	2.55
Barbed wire, galv., Chicago dist. mill.....	2.65	2.65	2.65	2.60
Tin plate, 100-lb. box, P'gh..	\$4.75	\$4.75	\$4.75	\$5.00

## Old Material

<i>Per Gross Ton:</i>				
Heavy melting steel, P'gh....	\$9.50	\$9.50	\$9.75	\$10.75
Heavy melting steel, Phila...	6.25	6.50	6.50	9.50
Heavy melting steel, Chicago	6.25	6.25	6.62½	8.75
Carwheels, Chicago.....	6.25	6.25	6.50	10.00
Carwheels, Philadelphia.....	9.00	9.00	8.50	12.00
No. 1 cast, Pittsburgh.....	9.00	9.25	9.25	10.25
No. 1 cast, Philadelphia.....	8.00	8.00	8.50	11.50
No. 1 cast, Ch'go (net ton)..	6.50	6.50	6.50	9.00
No. 1 RR. wrot., Phila.....	8.50	8.50	8.50	11.00
No. 1 RR. wrot., Ch'go (net)	3.75	4.25	4.25	7.50

## Coke, Connellsville

<i>Per Net Ton at Oven:</i>				
Furnace coke, prompt.....	\$2.00	\$2.25	\$2.25	\$2.40
Foundry coke, prompt.....	3.00	3.00	3.50	3.50

## Metals

<i>Per Lb. to Large Buyers:</i>				
Lake copper, New York.....	5.50	5.50	5.87½	8.62½
Electrolytic copper, refinery..	5.12½	5.00	5.50	8.25
Tin (Straits), New York....	20.50	21.10	20.40	22.45
Zinc, East St. Louis.....	2.87½	2.60	2.55	3.25
Zinc, New York.....	3.24½	2.97	2.92	3.60
Lead, St. Louis.....	2.90	2.90	2.90	3.60
Lead, New York.....	3.00	3.00	3.00	3.75
Antimony (Asiatic), N. Y....	5.12½	5.12½	5.35	6.30

# ▲ ▲ ▲ The Iron Age Composite Prices ▲ ▲ ▲

## Finished Steel

May 31, 1932	2.087c. a Lb.
One week ago	2.087c.
One month ago	2.087c.
One year ago	2.114c.

Based on steel bars, beams, tank plates, wire, rails, black pipe and sheets. These products make 87 per cent of the United States output.

	HIGH	LOW
1932 .....	2.087c., Mar. 29;	2.037c., Jan. 19
1931 .....	2.142c., Jan. 13;	2.052c., Dec. 29
1930 .....	2.362c., Jan. 7;	2.121c., Dec. 9
1929 .....	2.412c., April 2;	2.362c., Oct. 29
1928 .....	2.391c., Dec. 11;	2.314c., Jan. 3
1927 .....	2.453c., Jan. 4;	2.293c., Oct. 25
1926 .....	2.453c., Jan. 5;	2.403c., May 18
1925 .....	2.560c., Jan. 6;	2.396c., Aug. 18

## Pig Iron

\$14.06 a Gross Ton
14.06
14.35
15.63

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham

	HIGH	LOW
1932 .....	14.81, Jan. 5;	14.06, May 17
1931 .....	15.90, Jan. 6;	14.79, Dec. 15
1930 .....	18.21, Jan. 7;	15.90, Dec. 16
1929 .....	18.71, May 14;	18.21, Dec. 17
1928 .....	18.59, Nov. 27;	17.04, July 24
1927 .....	19.71, Jan. 4;	17.54, Nov. 1
1926 .....	21.54, Jan. 5;	19.46, July 13
1925 .....	22.50, Jan. 13;	18.96, July 7

## Steel Scrap

\$7.33 a Gross Ton
7.41
8.04
9.75

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	HIGH	LOW
1932 .....	\$8.50, Jan. 12;	\$7.33, May 31
1931 .....	11.33, Jan. 6;	8.50, Dec. 29
1930 .....	15.00, Feb. 18;	11.25, Dec. 9
1929 .....	17.58, Jan. 29;	14.08, Dec. 3
1928 .....	16.50, Dec. 31;	13.08, July 2
1927 .....	15.25, Jan. 11;	13.08, Nov. 22
1926 .....	17.25, Jan. 5;	14.00, June 1
1925 .....	20.83, Jan. 13;	15.08, May 5



# Pittsburgh and Valley Steel Output Declines Slightly as Orders Lag

PITTSBURGH, May 31.—The holiday week-end accentuated dullness of the steel market in the last week. Scarcely any lines of finished steel showed any improvement, although gains were recorded in specifications for tin plate. Substantial buying by the automobile companies is still deferred, although some third quarter inquiry has appeared for sheets and strip. Structural awards were swelled by the placing of two large Government jobs, both of which went to Pittsburgh fabricators. Other large contracts may be closed during the week.

Third quarter prices are yet to be named on most products, although current quotations on wire and nails have been reaffirmed. Advances on sheets and strip steel seem almost certain, although none of the major producers has opened its books for third quarter. The current 1.60c. on bars, plates and shapes is expected to be reaffirmed. With the base fairly well established on bars, efforts will be made to establish extras on a profitable basis. Higher prices for third quarter on semi-finished steel have not yet been tested.

Steel ingot production in the Pittsburgh district is lower, partly because of the general interruption in production over the holiday week-end. The current rate is not above 18 per cent, although some of the loss may be made up before the end of the week. Production in the Valleys is also about two points lower, while the Wheeling district is holding its own. Finishing mill schedules are unchanged or lower in the majority of cases, although tin plate is again approaching the 50 per cent level which prevailed early in the month, following two or three weeks of decline.

Raw material prices are very weak, with scrap being particularly affected by a lack of consumer purchases.

## Pig Iron

The market is without feature, sales being confined to small lots for immediate consumption. Producers have very little tonnage on their books and scarcely any new inquiry is appearing. One large inquiry for Bessemer iron is still before the trade. Iron from Lake Erie furnaces is still a factor in the market and Pittsburgh and Valley producers are meeting quotations made by these

Steel ingot output in Pittsburgh is about 18 per cent this week, while the Valley rate has declined to 23 per cent.

\* \* \*

Wire and nail prices reaffirmed for third quarter. Other price announcements expected soon.

\* \* \*

Raw material prices very weak. Scrap particularly affected.

▼ ▼ ▼

furnaces in some cases. Otherwise, prices are unchanged at recent nominal levels.

## Semi-Finished Steel

Shipments during May fell behind those of April with some producers, although the changes were not pronounced. Scarcely any new buying is reported, and billets, slabs and sheet bars are generally moving at \$26, Pittsburgh or Youngstown. No occasion has yet arisen to quote the third quarter price of \$28, but makers have all named this figure for that period. Quotations of \$33, Pittsburgh, on forging billets and \$37 on wire rods will likely be reaffirmed for third quarter.

## Rails and Track Supplies

Specifications for both rails and accessories were rather disappointing during May and scarcely any new buying was reported. The Eastern carriers are still undecided about their 1932 track-laying schedules and are confining present activity to absolute necessities. Loans being granted to the railroads by the Reconstruction Finance Corporation are not expected to be applied to any extent on track programs. Prices on light re-rolled rails have broken under \$30, Pittsburgh, in some cases and makers of new billet light rails have been forced to revise prices.

## Bolts, Nuts and Rivets

Third quarter books have not been opened by the bolt and nut makers, but present discounts are likely to be reaffirmed. Current orders are being taken at 75 per cent off list on bolts, 70, 10 and 5 per cent off on small rivets and \$2.25 a 100 lb. on large rivets. Incoming tonnage shows

little change and production continues at less than 20 per cent of capacity.

## Bars, Plates and Shapes

Although structural steel fabricators in the district have booked a few large orders in the last week, the general run of business has been unsatisfactory. Government work predominates in awards as well as in new inquiry. Reinforcing bar tonnage is developing slowly and has not yet reached expected proportions. Specifications for merchant and alloy steel bars have been better in May than in the preceding month. Plate business continues extremely light. Some barge inquiry is still before the trade and makers of steel tanks for the oil industry report a slight improvement in demand. Railroad car builders are generally idle and have little promise of new business from the carriers.

Producers of heavy hot-rolled products have not been called upon to quote on third quarter business and prices for that period have not been announced. No change from the present level of 1.60c., Pittsburgh, is expected.

## Cold-Finished Steel Bars

Current releases have not changed in volume. Producers have had little opportunity to quote for third quarter on the new price basis. Some opposition to the new plan has naturally been encountered, but the larger buyers seem willing to adhere to the new basis.

## Tubular Goods

Pipe continues to be one of the dullest of finished steel lines, incoming tonnage being barely sufficient to support a 15 per cent operation. Line pipe prospects are not bright, although the Standard Oil Co. of Kansas is said to be planning an extension to one of its lines which would require about 150 miles of pipe. Demand for casing from the oil industry is holding up with improvement reported by some makers. Butt-weld pipe is very quiet and scarcely any lap-weld tonnage is coming out.

## Wire Products

The wire business shows little change, although prospects for merchant products are still improving. Jobbers' stocks are very low. Crop reports are generally favorable in



the agricultural districts. Manufacturers' wire is moving to the automotive industry in better volume, but other large consumer groups are dormant. Third quarter prices have been announced by one maker with no increase over the current levels of 2.20c., Pittsburgh, on manufacturers' wire, and \$1.95 a keg on nails.

#### Sheets

Releases have been light in the last week, but there is a good prospect for improvement because of comparatively heavy automobile production schedules in June. Little new buying from this source is reported, but some third quarter inquiry has appeared. June shipments may show an increase over those of May, as automobile parts makers have cleaned up their stocks and will start the new month in a better inventory position than was the case at the beginning of May. Sheet demand from other sources is very quiet. Stove makers are specifying somewhat more heavily, but this tonnage is just beginning to move. The requirements of electric refrigerator producers continue to decline seasonably. Leading producers have not opened their books for third quarter and advances are still likely on some finishes. One large producer is expected to name its new prices during the week. Current levels are fairly well maintained, although confusion continues on some grades of sheets going to the automobile industry.

#### Tin Plate

Specifications have been a little heavier in the last week and an increase over the recent 45 per cent operating rate in the industry is in prospect this week. Reports on crop conditions are favorable and increased releases from the larger container makers are expected early in the new month.

#### Strip Steel

Demand from some of the large automobile companies is holding up fairly well, but the business is unevenly distributed among producers. As a result, mill schedules are spotty and show no aggregate change from last week. Scarcely any new buying is reported, although a few consumers have asked for third quarter quotations on their probable requirements. Mills have refused to quote thus far, but the large makers are expected to open their books during the present week. Higher asking prices seem to be definitely assured on hot-rolled strip, although the advance may amount to only \$1 a ton. Present quotations are well maintained on current spot orders.

#### Warehouse Business

Warehouses in this district have revised their prices on cold-finished steel bars to conform to the price schedules recently announced by the

mills and are now quoting cold-finished bars out of warehouse at 2.95c. for rounds and hexagons and 3.45c. for squares and flats. Quantity differentials corresponding to those named by producers will be applied. No other price changes are reported and sales out of warehouse are generally light.

#### Coke and Coal

Despite the current lack of activity in the coke market, prices on the furnace grade have weakened, and it is now quoted at \$2 to \$2.25 a ton, Connellsville. Foundry coke prices are soft, but quotations less than \$3, Connellsville are not encountered frequently on standard grades. Coal prices are nominal; industrial and railroad demand has fallen off in the last month.

#### Scrap

With the continued absence of mill buying, the scrap market is weaker, but quotations on the principal open-hearth grades have not been reduced on the basis of mill purchases. With dealer buying prices even lower than they have been, current price ranges on heavy melting steel and hydraulic compressed sheets are largely nominal. Blast furnace scrap is weaker, and specialties and low phosphorus grades have declined. Mill purchases of heavy melting steel may be made this week, and the price to be paid seems to be largely up to the buyers. The monthly list of the Baltimore & Ohio Railroad, closing on June 6, contains 6000 tons of scrap, including 1000 tons of No. 1 heavy melting steel.

### Birmingham Pig Iron and Steel Markets Stagnant

BIRMINGHAM, May 31.—The local pig iron market enters June with virtually no hope for a change from stagnation. May shipments of foundry iron were below those of April. Buying was extremely light, a large part of the May movement having been against old contracts. Current sales are confined to small lots. The quotation of \$11 for Southern deliveries remains firm. Four furnaces are in blast, there having been a loss of three on May 21. The Tennessee company has Fairfield No. 6 on basic, while Woodward Iron Co. and Sloss-Sheffield Steel & Iron Co. have one each on foundry and Republic Steel has one on high silicon iron. The Republic furnace, which has been on high silicon since April 23, will return to foundry iron early in June. On May 26 Woodward Iron Co. blew out its No. 1 furnace and replaced it with No. 2 furnace, which had been banked since March 5. The pipe situation is becoming more unsettled as business fails to

develop. The American Cast Iron Pipe Co. is now operating only four days every other week. This week the National Cast Iron Pipe Co. is to close down probably for 30 days. Operations at the other plants are very much reduced.

#### Steel

Steel buying has dwindled during the past few weeks. Bookings are scattered and varied, made up of small routine requirements. Prices are holding. Open-hearth operations last week and this week consist of six units, the Tennessee company working four at Fairfield and Gulf States Steel two at Alabama City. It is likely that the open-hearth plant of Gulf States Steel will be idle again next week.

#### Scrap

New business is infrequent, and there is no interest in the market. A few contract shipments are being made sporadically.

### Pacific Coast Prices Are Strengthening

SAN FRANCISCO, May 28.—Further evidences of strengthening in the price structure are to be seen in the prompt announcement of California jobbers of new quantity differentials on cold-finished steel bars, reflecting the change in mill quotations.

From southern California come reports that the weak market on reinforcing bar has been noticeably strengthened and that current contracts are being closed more nearly on the basis of domestic mill schedules.

Specifications for San Gabriel Flood Control Dam No. 1 have been announced by the Los Angeles County Board of Supervisors, calling for 3837 tons of reinforcing steel and 267 tons of pipe, valves and trash racks. A call for bids will be issued later. The California Highway Commission announces a bridge program aggregating \$1,100,000, on which bids will be called during the next 60 days. In addition to the \$1,000,000 first unit for the Army bombing base at Marin Meadows, for which bids will be opened June 6, the Federal Bureau of Public Roads will open bids on June 9 for the first group of buildings for its new base on Government Island, Oakland. Seven buildings of steel frame and hollow tile construction are involved.

Awards during the week as reported on major projects approximated 1500 tons, with definite call for bids on 2100 tons in new inquiries. The Marin Municipal Water District will open bids June 2 on 2400 tons of cast iron pipe for an extension to the Army bombing base.



# Chicago Steel Production Steady; Specifications Slightly Better

CHICAGO, May 31.—The holiday was observed by some rolling mill units, though open-hearth departments continued to produce at 20 per cent of capacity.

Bolt, nut and rivet manufacturers are announcing present price schedules for the third quarter. Steel producers are not making statements of price policies, but are making rather strenuous efforts to bolster a few weak spots. The base price for alloy steel bars is shaken in some sections, and some variation is noted in cold-rolled strip.

Scrap continues to sag as demand runs very light, with yard dealers liquidating first one grade and then another as pressure for cash becomes intense. The pig iron market, which has been somewhat ruffled in recent weeks, gives the appearance of successful stabilization at \$16, Chicago furnace.

New buying of steel mill products was stimulated slightly near the end of the month, this being in accordance with the usual practice of buyers in a market such as is at hand. Specifications show up as the best in three weeks, which is again a reflection of low inventories that are allowed to drop sharply at the month end, when new orders are placed for delivery early in the new month.

## Pig Iron

May shipments of Northern foundry iron are only a trifle above the April volume. New buying, though still very sluggish, is coming out in somewhat larger individual quantities. Prices are still unsettled, but appear to be better stabilized at \$16 a ton, local furnace. Prices for Northern iron and the factor of delivery are holding back the flow of Southern iron to this district.

## Reinforcing Bars

Prices remain highly variable regardless of the tonnage involved. Government hospital work is in larger volume and several new post offices are out for figures. A small tonnage has been placed for Illinois bridges, but little road steel has reached mills from recent lettings. Shipments of rail steel bars are climbing slowly.

## Cold-Rolled Strip

Production has increased about two points to 18 per cent of capacity. Such support as there is to the mar-

Chicago ingot output steady at 20 per cent, which has been the approximate rate for some weeks.

Month-end specifications and orders for steel the best in three weeks.

Liquidation in scrap continues.

Weakness in alloy steel bars and cold-rolled strip.

ket comes almost wholly from the automotive industry. Prices remain steady, with no word as to third quarter quotations.

## Cast Iron Pipe

Sellers are making a stronger effort to raise prices. Efforts are being made to obtain \$30 to \$32 a ton for 6-in. and larger diameter pipe. The Lynchburg Foundry Co. is reported low on a tonnage at Chicago. The United States company has taken tonnages at Hamilton, Ohio, and at Saint Paul. The American Cast Iron Pipe Co has taken some public utility work in Iowa.

## Wire Products

A slight drop in demand is taking place, and output has been adjusted downward to about 25 per cent of capacity. Use of reinforcing mesh is increasing slowly. The nail market remains dull notwithstanding a moderate pick up in spring construction work. Public utilities continue to practice economy and therefore remain small users of copper wire and cable.

## Belts, Nuts and Rivets

Sellers are carrying present prices forward to the third quarter and are now having contracts written for submission to the trade. Demand from jobbers is up slightly. Washing machine manufacturers are using slightly larger quantities. Consumption to the east of Chicago is said to be taking an upward turn.

## Sheets

Specifications and new buying were sharply lower prior to the holiday. Hot mill schedules were severely han-

dicapped and most units will not resume operation until Wednesday night. Prices are steady.

## Rails and Track Supplies

Output is off slightly, and unless new orders appear rail mills will have completed rolling schedules in about three weeks. New buying of track supplies is slack, but specifications remain at the level of recent weeks.

## Bars

Specifications from miscellaneous sources are increasing, but individual lots are small. The rail steel commodity is listless, with prices generally at 1.50c. a lb.

## Structural Material

State bridge work is bringing fair tonnages to Midwestern shops, and prospects for new business of this kind are better. Steel for two of the World's Fair buildings has been ordered and bids will be taken on three structures in the near future. Occasionally word is passed along of large structures that are planned for Chicago. A number of such plans have been drawn, but the promoters cannot hurdle the financial problem.

## Plates

As has been apparent for several weeks, the tank market is coming to life. New orders total 1200 tons and at least 1000 tons is before the trade. Little is heard these days of pipe projects. Very small quantities of steel are moving to railroad shops.

## Scrap

About the only active spot near Chicago is western Michigan, where a number of malleable foundries are working near full time on automobile parts orders. The market in the immediate vicinity of Chicago turned extremely dull last week, following the decision of some steel mill units not to resume rolling schedules until Monday night. This action virtually stopped the flow of heavy melting steel. A boat load of borings left for Lake Erie Saturday, and dealers are making a canvass of the situation to determine whether market levels still offer a profit on similar transactions. Prices, which are mostly nominal, lean decidedly to the weak side, as dealers show keen anxiety to sell tonnages.



# Structural Steel More Active in the New York Market

12,000 Tons for General Post Office Awarded to McClintic-Marshall—Small Jobs More Numerous

NEW YORK, May 31.—Structural steel again leads in activity in the local steel market. Aside from structural steel, there is, in fact, very little business. With some companies, the May totals of steel orders were the smallest in many years. The contract for 12,000 tons of fabricated steel for the General Post Office extension in New York was awarded to the McClintic-Marshall Corp. Two Washington projects for the Federal Government, one the Department of Agriculture extensible building and the other a post office, will require 17,500 tons of steel. Small structural steel awards were slightly more numerous, and a few private projects are appearing, but there is still a preponderance of public work. A contract probably will be closed this week for about 3000 tons of pipe for foundation piling for the Federal Court Building in New York.

In railroad equipment, the principal item is an award of 50 gondola cars by the Wheeling & Lake Erie to the Canton Car Co. The Western Maryland is taking bids on the conversion of 150 70-ton gondola cars into drop-end gondola cars.

Wire makers have reaffirmed present prices on wire nails for the third quarter. Generally, steel companies have not opened their books for the next quarter, and price announcements are being withheld. It is believed, however, that some advances may occur in the sheet classifications and on hot-rolled strip. Owing to the lack of business in plates, the Bethlehem Steel Co. is not operating its plate mills at Buffalo, and therefore the Buffalo base on plates is temporarily in eclipse. Bethlehem is shipping plates from Johnstown, Pa., and Sparrows Point, Md., and is meeting the delivered prices as quoted from Pittsburgh and Coatesville basing points.

Sweet's Steel Co., Williamsport, Pa., through its special agent, the Seaport Contracting & Supply Co., 17 Battery Place, New York, has been awarded a contract by the Board of Transportation, New York, for 3500 tons of 150-lb. special electrical contact rail and 400 tons of standard-section rail for subways. Delivery is to be made over the next three or four months.

## Pig Iron

Sales of 1000 tons in the past week brought the business for May to about 5000 tons, one of the smallest monthly totals in the history of the local trade. Demand continues to drag. The out-

look for improvement is somewhat dimmed by prospects of a further contraction in foundry operations during the summer months, and any significant upturn in activity is not looked for before next fall. Prices continue to lack strength. In the absence of important tonnage, however, no open breaks are in evidence. A 1200-ton cargo of Indian iron, which arrived recently at New York, is understood to have been reshipped by barge into storage at Bridgeport, Conn.

## Reinforcing Bars

Fresh inquiry for bars is slow in appearing. New specifications are still largely restricted to State projects. A total of about 1000 tons is required for State bridge and highway construction in New Jersey. Awards in the past week included 670 tons for the Meadowbrook State Hospital on Long Island to Carroll-McCreary Co. and 500 tons for the Troy-Menands bridge to Joseph T. Ryerson & Son, Inc. Prices are fairly well maintained at 1.60c., Pittsburgh, or 1.95c., New York.

## Scrap

Loading of No. 1 heavy melting steel for shipment to Japan and light movement of blast furnace scrap represent the only activity in an otherwise lifeless market. All grades are nominally unchanged.

## St. Louis Market Dull but Prices Are Firm

ST. LOUIS, May 31.—May has been marked by the small number of spot orders for pig iron. However, the local maker reports that specifications against contracts have been heavier this month, with the result that shipments for May exceeded those of the preceding month. Basic users have made some inquiries about third-quarter prices. Pig iron prices are unchanged.

## Steel

Open-hearth operations in the district were reduced by one furnace, the present rate being about 8 per cent of capacity. While volume is lacking in plates, shapes and bars, the price structure remains firm. State of Missouri will open bids June 7 for highway projects involving 700 tons of structural steel, and the Texas Highway Commission will open bids

on June 10 on projects requiring 870 tons of reinforcing bars. The United States Engineer's Office at Memphis will open bids June 2 on levee projects, which will require 130 tons of reinforcing bars and an undetermined tonnage of steel piling, variously estimated at from 100 tons to 2000 tons, depending upon the plans adopted.

## Scrap

A district mill, whose contemplated purchase of a round tonnage of heavy melting steel has been pending for several weeks, is expected to come into the market this week. There has been no buying for several weeks. No. 1 locomotive tires are 50c. lower. Railroad lists: Missouri Pacific, 165 carloads; Pennsylvania, 28,000 tons.

## Buffalo Steel Output Lower This Week

BUFFALO, May 31.—The only pig iron business is lots of 50 and 100 tons. May was the poorest month for pig iron movement this year. Sales and shipments curves are practically equal.

## Steel

The Lackawanna plant of Bethlehem Steel has reduced its active open-hearths from eight to five and will probably remain at the lower rate for some time. Republic Steel charged three furnaces Sunday for this week's operation. The Seneca Iron & Steel Co. is at 25 to 30 per cent. Last week, in error, the amount of structural steel to go into the 106th armory was noted as 300 to 400 tons. While plans are not yet out, it is believed that this tonnage will run between 3000 and 4000 tons. Plans will be out the latter part of June. An award of 500 tons of reinforcing bars was made on the Troy-Menands bridge to a Jersey City concern.

## Scrap

The only feature of the past week was the releasing by one of the larger consumers of orders which have been suspended for months. The releases concerned No. 2 heavy melting steel almost exclusively. A few small sales of short rails and No. 1 machinery cast are noted. Prices are nominal.

## Detroit Scrap Market Bare of Orders

DETROIT, May 31.—In the absence of consumer buying, scrap quotations are largely nominal. An important automobile maker which took bids May 27 on its June list is considering holding its material off the market until prices are higher.



# Pennsylvania Railroad Work To Be Started Within Two Weeks

Electrification Project Financed and Will Result in Early Release of 60,000 Tons of Steel

**P**HILADELPHIA, May 31.— Though mild improvement has developed in tonnage inquiries and bookings in this district, the betterment is confined almost exclusively to plates and shapes. More marked impetus will come when the Pennsylvania Railroad begins to release suspended orders and places new business in connection with resumption of electrification and terminal improvement between New York and Washington. The railroad will obtain \$5,000,000 tomorrow as the first instalment of the \$27,500,000 to be loaned by the Reconstruction Finance Corporation. The road is expected to first resume terminal and other work at Newark, N. J., in about two weeks.

Steel works operations are unchanged at about 15 per cent of capacity.

## Pig Iron

So little business is being done in pig iron that the market is not being given a real test. Sales are confined to carlots. Domestic furnaces are quoting No. 2 foundry at \$14 to \$14.50, with the lower level taking a more pronounced position. Royal Dutch iron is said to be obtainable at \$13.50 at dock. The offering of this iron and English iron is apparently having some effect on the price structure of domestic iron, though makers of the latter contend they will not go below present quotations on tonnages now being sought.

## Plates, Shapes and Bars

Inquiries and bookings for both plates and shapes have increased slightly. They come from miscellaneous sources and in small lots. Two mills in this district were awarded tonnages for two patrol boats, being built by the Mathis Yacht Building Co., Camden, N. J., for the Coast Guard. One mill was given the shapes and another the plates. The release orders to be given by the Pennsylvania Railroad, together with new business for its electrification project, will involve 60,000 tons of steel. This assumes the completion of the work and the borrowing of \$27,500,000 from bankers to supplement the Reconstruction Finance Corporation loan of that amount and \$13,000,000 of the railroad's own funds. The bulk of the steel tonnage will be shapes. Much of it will come from this district though some will come from other districts. The market for merchant bars is dull. Makers of rail steel bars in this district, as in other

districts, have announced a contractor's price of 1.30c., Pittsburgh, effective at once. This is an advance of \$3 a ton. Bending extras range from \$5 a ton on heavy material to \$15 on light material, while a charge of \$2 is named for engineering. The price to distributors is 1.20c. The new levels have not been tested.

## Sheets

The market is extremely dull. Mills in this district have received no orders, so far as reported, from the Ford Motor Co. for its new models. Prices are holding well, however, and apparently more interest in prospective third quarter advances is being shown.

## Imports

Pig iron imports last week consisted of 658 tons from India and five tons from Sweden. An unusual shipment was 500 tons of ferromanganese from Yugoslavia. The only steel item was 32 tons of structural shapes from Belgium.

## Warehouse Business

Jobbers report that May sales were about the same as in April. Some warehouse interests have experienced slightly better demand the past week, while others have noted no change.

## Scrap

Growing softness is reflected in the market for scrap. No. 1 heavy melting steel is down to a narrower range of \$6 to \$6.50, with a decline also in No. 2 heavy melting material. These reduced levels are based on sales. Demand is light.

## Canadian Order Placed for 15,000 Tons of Rails

**T**ORONTO, May 30.—The Dominion Government has placed an order with the Dominion Steel & Coal Co., Sydney, N. S., for 15,000 tons of steel rails for the Atlantic division of the Canadian National Railways, according to official report. This order will mean the blowing in of one blast furnace, four to six open-hearth furnaces and the starting up of the blooming and rail mills.

Announcement was made from Sault Ste. Marie, Ont., that the Algoma Steel Corp. is completing its contract for 25,000 tons of steel rails

for the western section of the Canadian Pacific Railway. As soon as this order has been filled, the rail mill will shut down, there being no additional rail business in sight. Merchant mills, however, are busy and the company has some business on its books from the automotive industry.

With the exception of the rail contract placed with the Dominion Steel & Coal Co., general business in the iron and steel industry is practically at a standstill. While some business appeared as a result of increased operations in the automotive industry, this is now drying up. Building trades are practically at a standstill, resulting in production stagnation by allied interests.

## Pig Iron

While sales were at a favorable rate a week or 10 days ago, they have since fallen into a slump. Inquiries are negligible and melters are buying as demands dictate. Prices are unchanged.

## Scrap

New business in scrap is generally of a specialized nature. Steel mills are out of the market. Current sales run almost exclusively to iron grades.

## New England Pig Iron Business Virtually Nil

**B**OSTON, May 31.—May will go down in New England pig iron history as the leanest month on record for bookings. Practically all local furnace representatives reported no sales the past week, and it is doubtful if more than 100 tons was booked. In the absence of business or chance to make offers to foundries, there is no opportunity for prices to change. The market is absolutely bare of inquiries.

The scrap market the past week was simply a repetition of former weeks. Most concerns did absolutely nothing. New England consumption of heavy melting steel, skeleton, machinery cast and other materials is at record-breaking low levels.

The American Bridge Co. has been awarded 400 tons of fabricated steel for a State bridge in Rhode Island, the largest contract placed in May. May major fabricated structural steel lettings aggregated 1497 tons, which compares with 972 tons for April, 1459 tons for March, and 3713 tons for February.

## Railroad Equipment

Western Maryland is inquiring for prices on conversion to drop end cars of 150 70-ton gondola cars.

Boston & Maine is contemplating purchase of a number of gas-electric or oil-electric rail motor cars.

Wheeling & Lake Erie has ordered 50 gondola cars from Canton Car Co., Canton, Ohio.



# Cleveland Market Experiences a Moderate Improvement

Better Flow of Small Bar Orders, Mostly as Result of Ford Expansion  
—Ingot Output Maintained

CLEVELAND, May 31.—The moderate improvement in the demand for steel bars previously reported is being maintained, but all the business is in small lots, there being no noticeable increase in the size of orders. The better demand is traceable in part to the increased production by the Ford Motor Co. New demand for other steel products does not show much life. However, there seems to be some improvement in sentiment as well as in the industrial situation, as a few metal-working plants report an increase in their business.

Cleveland steel plants for the third week in succession are maintaining their production at 38 per cent of ingot capacity.

Present prices on wire products and wire rods have been reestablished for the third quarter. Quality differentials are expected to be announced on commercial forging billets that will result in an advance of \$2 or more per ton, depending on the customer's requirements. No announcements of prices on other products for the coming quarter came out during the week. It seems fairly certain that present prices on steel bars, plates and shapes will be reaffirmed. There is still an expectation that because of the advance in semi-finished steel prices sheets and possibly hot-rolled strip will be marked up.

## Pig Iron

Inquiry shows a slight gain. Two or three lots of around 500 tons are pending from foundries allied with the motor car industry. May has shown a slight improvement over April in both sales and shipments. Business in the immediate territory is limited to car lots. While \$15 is the nominal price for foundry and malleable iron for outside shipment, \$14.50 more nearly represents the market, and absorption of freight rates results in a lower price for more competitive points. For Cleveland delivery, the market is steady at \$15.50, furnace.

## Semi-Finished Steel

The present \$37 price on wire rods has been reestablished for the third quarter. Following the announced advance of \$3 a ton on commercial forging bars for that delivery makers of semi-finished steel plan to place in effect quality extras for commercial forging billets, the extra to depend on the use for which the steel is required. The extras, according to the plan, will range from \$2 a ton up to the regular forging billet extra

of \$5. While some extras already exist, they are not being enforced.

## Bars, Plates and Shapes

Mills are getting a fair volume of small orders for bars, largely from the automotive industry and particularly from bolt and nut makers for nuts for Ford cars. Concessions recently have been granted to some consumers of alloy steel bars not on the preferred list. To clarify the price situation that has developed, new quantity differentials may be announced shortly on alloy steel bars similar in plan to that recently named by makers of cold-finished steel bars. At present quantity differentials on alloy steel bars apply only to lots of less than 2000 lb. Fifty gondola cars placed by the Wheeling & Lake Erie Railroad will require 1200 tons of steel. There is little activity in the building field, although quite a few jobs requiring less than 100 tons are coming out. Prices are steady at 1.65c., Cleveland, for bars and at 1.60c., Pittsburgh, for plates and shapes.

## Wire Products

Present prices on wire products have been reestablished for the third quarter. Manufacturers on June 1 will announce fall terms on woven wire fence, or one month earlier than these terms usually are named. Prices are steady at regular quotations of 2.20c. for wire and \$1.95 per keg for nails.

## Strip Steel

Consumers in the automotive field continue to take hot-rolled strip against contracts in the same volume as recently. However, very little new business is coming out. Prices are firm at 1.40c. and 1.50c., Pittsburgh, for wide and narrow hot-rolled strip, and 2c., Cleveland, for cold-rolled material.

## Sheets

Orders are fair in volume, but are only for small lots. Job stamping plants are doing more estimating than recently. Demand from the refrigerator industry is holding up fairly well, although not as heavy as earlier in the season. Prices are well maintained.

## Warehouse Business

Following the recent revision of quantity extras in mill prices on cold-finished steel bars, local jobbers have adopted new prices and extras to become effective June 1. The base price

is reduced \$3 per ton to 2.95c. for rounds and hexagons and to 3.45c. for squares and flats. The base price applies to 1000 lb. of a size or grade shipped at one time. The new extras are 25c. per 100 lb. for 500 to 999 lb., 75c. for 300 to 499 lb., \$1 for 100 to 299 lb., and \$1.25 for less than 100 lb.

## Scrap

The market is weak. Price declines have occurred on several grades on which quotations recently have been nominal in the absence of transactions. Heavy melting steel is slightly lower. Blast furnace grades are unchanged.

## Cincinnati Scrap Prices Reduced; Pig Iron Dull

CINCINNATI, May 31.—Current pig iron bookings continue to be light, totaling about 500 tons the past week. Shipments reflect the small melt. Changes in Valley prices have not affected Northern iron quotations here, although past experience indicates Northern furnaces will meet competition.

A moderate increase in sheet specifications the past week warrants rolling schedules this week at a little above 30 per cent. Except for demand from the small car field, automotive buying is light.

## Cast Iron Pipe

Somerville, Mass., has placed 130 tons of 8-, 10- and 12-in. pit cast pipe with Donaldson Iron Co.

Beverly, Mass., awarded 100 tons of 12-in. to Warren Foundry & Pipe Corp.

Hudson, Mass., placed 100 tons of 6- to 12-in. with Warren Foundry & Pipe Corp.

Leominster, Mass., awarded 50 tons to Warren Foundry & Pipe Corp. and 50 tons to R. D. Wood & Co.

State of Massachusetts purchased 112 tons of 4- to 60-in. from Warren Foundry & Pipe Corp.

State of New York will open bids early this month on about 300 tons of 6- to 16-in. for State institution projects.

Borough of Brooklyn awarded 200 tons of 12- and 14-in. for sewerage pumping station to Warren Foundry & Pipe Corp.

A Pennsylvania public utility purchased 500 tons of 6- to 16-in. from Warren Foundry & Pipe Corp.

Chicago has taken bids on 1025 tons of 4- to 12-in.; Lynchburg Foundry Co. is low bidder.

Hamilton, Ohio, awarded 5500 tons of 12-in. to United States Pipe & Foundry Co.

St. Paul awarded 1200 tons to United States Pipe & Foundry Co.

Oklahoma City has taken bids on 950 tons; American Cast Iron Pipe Co. is low bidder on 150 tons of 8 and 12-in.; National Cast Iron Pipe Co. low bidder on 800 tons of 6-in.

San Rafael, Cal., Marin Municipal Water District, opened bids June 2 for 1100 tons, including 30,000 ft. of 12-in. and 4400 ft. of 10-in. for a line extension to serve the army bombing base at Marin Meadows.

Victorville, Cal., voted favorably on a bond issue for \$48,000 for water system improvements, involving 631 tons of 4- and 6-in. pipe.

Centralia, Wash., awarded 340 tons of 18- and 20-in. to R. D. Wood & Co.

Bremerton, Wash., Marine Water District of Kitsap County awarded 210 tons to R. D. Wood & Co.

Fort Lewis, Wash., has divided 100 tons of 4- and 6-in. between American Cast Iron Pipe Co. and R. D. Wood & Co.



# Fabricated Structural Steel

Awards the Largest This Year—New Projects Also in Better Volume

LETTINGS of about 31,000 tons, which were the largest since the last week in December, included 12,000 tons for a post office extension in New York and 10,000 tons for a building for the Department of Agriculture, Washington. New projects were also larger, calling for 11,500 tons. The largest inquiry is for a post office in Buffalo, which will require between 3000 and 4000 tons. Contracts in May totaled 40,900 tons, compared with 43,600 tons in April and 66,100 tons in March. Awards follow:

## NORTH ATLANTIC STATES

State of Rhode Island, 400 tons, highway bridge at Richmond, to American Bridge Co.  
New Haven, Conn., 145 tons, Trumbull dormitory, Yale University, to Falmer Steel Co.  
Clinton, N. Y., 390 tons, Central School, to Shippers Carline Corp.  
New York, 12,000 tons, general post office extension, Eighth Avenue, to McClintic-Marshall Corp.  
New York, 125 tons, two-story building, Christopher and Fourth Streets, to Empire Structural Steel Co.  
Washington, 10,000 tons, Department of Agriculture extensible building, to Fort Pitt Bridge Works Co.  
Washington, 770 tons, radio towers for Department of Commerce, to Blaw-Knox Co.  
Beaver, Pa., 600 tons, Montgomery locks, to Independent Bridge Co.

## SOUTH AND SOUTHWEST

Richmond, Va., 370 tons, transit shed and warehouse, to Cruikshank Iron Works.  
Anderson, S. C., 165 tons, mill building, to Greenville Steel & Foundry Co.  
Galveston, Tex., 350 tons, immigration station, to Petroleum Iron Works.  
Kendall County, Tex., 355 tons, highway bridge, to Virginia Bridge & Iron Co.  
State of Oklahoma, 250 tons, to Petroleum Iron Works.

## CENTRAL STATES

Martin, Ohio, 115 tons, bin and kiln buildings, to American Bridge Co.  
Toledo, Ohio, 150 tons, grade separation for Toledo Terminal Railroad Co., to American Bridge Co.  
Chillicothe, Ohio, 100 tons, State highway bridge, to Fort Pitt Bridge Works Co.  
Chicago, 400 tons, agricultural building for World's Fair, to Wendnagel & Co.  
Chicago, 700 tons, general exhibit building for World's Fair, to American Bridge Co.  
State of Illinois, 700 tons, bridges, to Midland Structural Steel Co., Vincennes Bridge Co. and Wisconsin Bridge & Iron Co.  
State of Indiana, 355 tons, highway bridges, to Vincennes Bridge Co., Continental Bridge Co., Bedford Foundry & Machine Co. and Central States Bridge & Structural Co.  
State of Wisconsin, 360 tons, highway bridges, to Clinton Bridge Works.

## WESTERN STATES

Idaho Falls, Idaho, 125 tons, structure, to Minneapolis-Moline Power Implement Co.  
State of Montana, 150 tons, highway bridge, to Minneapolis-Moline Power Implement Co.  
Stockton, Cal., 260 tons, Garwood Ferry County bridge, to Moore Dry Dock Co.  
Sacramento, Cal., 726 tons, H Street American River County bridge, to Moore Dry Dock Co.  
Salinas, Cal., 125 tons, five County bridges, to Moore Dry Dock Co.  
Monterey, Cal., 100 tons, telephone building, to McClintic-Marshall Corp.  
Kelso, Wash., 190 tons, Lewis River County bridge, to Isaacson Iron Works.  
Seattle, 185 tons, University of Washington law school, to Northwestern Steel Rolling Mills.  
Shoshone County, Wash., 215 tons, Stillamish River highway bridge, to Pacific Coast Steel Co.

## NEW STRUCTURAL STEEL PROJECTS

### NORTH ATLANTIC STATES

Washington, 10,000 tons, Department of Justice building; bids opened May 31.  
Salem, Mass., 160 tons, post office.  
Brookline, Mass., 125 tons, telephone exchange.  
State of New Jersey, 1420 tons, viaduct, route 29, across Pennsylvania Railroad Waverly yards; bids June 13.  
Monmouth County, N. J., 2500 tons, bridge across Shrewsbury River between Highlands and Seabright, route 36; Seeds & Durham, Philadelphia, low bidders for general contract.  
Buffalo, 3000 to 4000 tons, 106th armory; previously reported as 300 to 400 tons, plans out this month.  
Owego, N. Y., 350 tons, state highway bridge.  
Ithaca, N. Y., 200 tons, County jail.  
Washington, 10,000 tons, superstructure, Post Office Department building; McClosky & Co., Philadelphia, low bidders on general contract.

## Reinforcing Steel

Awards 2900 Tons—New Projects 7400 Tons

### AWARDS

Long Island, N. Y., 669 tons, Meadowbrook State Hospital, to Carroll-McCreary Co.  
Albany, N. Y., 500 tons, Troy-Menands bridge, to Joseph T. Ryerson & Son, Inc.  
Danville, Ill., 300 tons, Veterans' Hospital, to Concrete Engineering Co.  
Terre Haute, Ind., 200 tons, Veterans' Hospital, to Concrete Engineering Co.  
Cincinnati, 114 tons, for road construction, to West Virginia Rail Co.  
Columbia, S. C., 130 tons, post office, to Connors Steel Co.  
Baton Rouge, La., 125 tons, to Laclede Steel Co.  
Berkeley, Cal., 100 tons, baseball bleachers for University of California, to Pacific Coast Steel Co.  
Hershey, Pa., 750 tons, storage building for Hershey Chocolate Co., to Taylor-Davis Co., Philadelphia.

### NEW REINFORCING BAR PROJECTS

State of New Jersey, 390 tons, viaduct, route 29, across Pennsylvania Railroad Waverly yards; bids June 13.  
State of New Jersey, 600 tons, highway project; bids June 13.  
Hoboken, N. J., unstated tonnage, Davis Baking Powder & Cocomalt Co. building.  
Washington, 2000 tons, superstructure, Post Office Department building; McClosky & Co., Philadelphia, low bidders on general contract.  
Chicago, 200 tons, Marine Hospital; A. W. Swayne, low bidder.  
Sioux City, Iowa, 300 tons, post office.  
Des Moines, Iowa, Veterans' Hospital, 400 tons; bids to be opened June 8.  
Joliet, Ill., tonnage being estimated, post office.  
Chicago, 100 tons, Nurses' Home at Hines Hospital.

## SOUTH AND SOUTHWEST

Jefferson County, Tenn., 510 tons, bridge; International Bridge Co., low bidder.  
Bullitt County, Ky., 160 tons, bridge; Vincennes Bridge Co., low bidder.  
Breckinridge County, Ky., 170 tons, bridge; Vincennes Bridge Co., low bidder.  
Myrtle, Ark., 850 tons, bridge for Missouri Pacific Railroad.  
State of Oklahoma, 600 tons, highway bridges.  
Macon, Ga., 275 tons; building; Concord Construction Co., Philadelphia, general contractor.

## CENTRAL STATES

Cincinnati, 225 tons, building for Metal Products Co.  
State of Wisconsin, 150 tons, Peshtigo River bridge; Wausau Iron Works, Wausau, Wis., low bidder.  
State of Wisconsin, 200 tons, Somerset bridge, St. Croix County; Clinton Bridge Works, Clinton, Iowa, low bidder.  
Duluth, Minn., 900 tons, medical arts building; project revived.  
Custer City, S. D., 200 tons, highway bridge.  
Joliet, Ill., 200 tons, post office.  
Chicago, 400 tons, Crawford Avenue bridge for Cook County.

## WESTERN STATES

State of Arizona, 115 tons, Clear Creek State highway bridge; bids close June 16.  
San Francisco, 1000 tons, distributing plant for Dairy Delivery Co.; bids closed May 27.  
San Simeon, Cal., 184 tons, two State highway bridges; bids closed June 15.  
Riverside, Cal., 106 tons, Main Street grade crossing for Southern Pacific Railroad.

## FABRICATED PLATE

### AWARDS

Geneva, Ill., 100 tons, 300,000-gal. elevated tank, to Chicago Bridge & Iron Co.

Memphis, Tenn., 130 tons, three sea walls for Mississippi River projects for United States Engineer's Office; bids opened June 2.  
State of Texas, 870 tons, highway projects; bids to be opened June 10.  
San Simeon, Cal., 113 tons, State highway structures; bids close June 15.  
Oakland, Cal., 135 tons, Park Boulevard city trestle; bids close June 9.  
Los Angeles County, Cal., 225 tons, San Gabriel forest highway for Federal Bureau of Public Roads; bids close June 16.  
Los Angeles County, Cal., 3837 tons, San Gabriel Dam No. 1.  
Pasadena, Cal., 100 tons, St. Joseph's Hospital.

## Pipe Lines

San Juan Pipe Line Co., J. A. McDonald, 857 South Gramercy Place, Los Angeles, head, plans 8 $\frac{1}{4}$ -in. steel pipe line from oil field district in section of San Juan County, Utah, to refining plant of Continental Oil Co., Farmington, N. M., about 92 miles. Project will include one main line pumping plant and two booster pumping stations. Cost over \$500,000.  
United States Engineer Office, Jacksonville, Fla., asks bids until June 10 for 1500 ft. 20-in. inside diameter rivet weld special steel shore discharge pipe (Circular 538).

Quartermaster Supply Officer, Army Base, Brooklyn, asks bids until June 7 for quantity of welded steel pipe (Circular 213).

Southern Counties Gas Co., 810 South Flower Street, Los Angeles, let contract to Lindgren & Swinerton, Inc., 523 West Sixth Street, for about 44 miles of pipe line in San Diego County, at \$88,000, exclusive of pipe and fittings. Pipe will be 12 $\frac{1}{4}$ -in. outside diameter, and was recently purchased by Southern Counties company from Republic Steel Corp., Youngstown.

Long Beach, Cal., opened bids June 1 for about 400 tons of  $\frac{3}{4}$ - to 8-in. wrought steel gas and line pipe. Bids received May 4 were rejected and specifications slightly modified.

Willcox, Ariz., has voted bonds for \$72,000 for purchase of the present water system, for contemplated improvements, and for erection of a main sanitary sewer and disposal plant.



# Copper Slightly Firmer; Zinc Higher; Tin and Lead Are Steady

NEW YORK, May 31.

## Copper

Owing probably to tariff agitation, the quotation for electrolytic copper stiffened on May 25 to 5.37½c. a lb., delivered in the Connecticut Valley, and has remained there since. Because of the week-end holidays there has been no test of the market, which is quite inactive. Practically all sales are being made by custom smelters, both domestic and foreign, at 5.37½c. a lb., delivered, with export business at 5.50c., c.i.f. usual European ports. Primary producers are almost entirely out of the market at 6c. a lb. for domestic business and at 6.25c. for export. Sales to American consumers have been made as far ahead as November and December. Export sales for May are put at about 8400 tons, which is a little better than the April total. Prices for Lake copper are unchanged.

## Copper Averages

The average price of Lake copper for May, based on daily quotations in THE IRON AGE, is 5.67c. a lb., delivered

New York. The average price of electrolytic copper is 5.25½c., refinery, or 5.50½c., delivered in the Connecticut Valley.

## Tin

Complete absence of buying and relatively firm prices are the features of an uninteresting market. Spot Straits tin was quoted today at 20.50c. a lb., New York. Large consumers are well covered far ahead and there is very little other buying. Deliveries into American consumption for May were 3135 tons, of which 3000 tons came in at Atlantic ports. United Kingdom stocks on May 28 were 33,395 tons, an increase for that week of 55 tons. As contrasted with a week ago, London prices today were about £4 per ton less, with spot Standard at £118 17s. 6d., future Standard at £121 and spot Straits at £123 2s. 6d.

## Lead

A moderate amount of steady buying continues, and prices remain firm at levels which have prevailed for some time, or 2.90c., St. Louis, and

3c., New York. One or two companies report the selling of their intake. A large share of consumers' requirements for June has been contracted for. All indications point to a satisfactory statistical position for May.

## Zinc

Prime Western zinc enjoyed during the week what may be characterized as a sensational advance for these times. In one week the quotation rose from 2.30c. to 2.87½c., East St. Louis, or 57½ points. This advance is explained as brought about by drastic reductions in the production of ore in the Joplin district and by an increase of about \$4 a ton in the price of the ore. Buying, especially at the lower levels, is stated to have been in good volume. A little metal is available at 2.85c., and a sale is reported as high as 3c. Quotations are firm at 2.87½c., East St. Louis, and 3.24½c., New York.

## Steel Production in Canada Lower in April

Steel ingot and castings production in Canada in April declined 17 per cent from March output, while pig iron production was slightly less than in the preceding month. Output of ferroalloys in April almost doubled the March production. April production figures in gross tons and comparisons follow:

	April, 1932	March, 1932	April, 1931
Pig iron.....	16,898	17,989	53,792
Steel ingots and direct steel castings.....	36,030	43,572	91,461
Ferroalloys.....	2,185	1,295	4,605

In the article by H. A. Winne in THE IRON AGE of May 5 on "Electrical Equipment of Wheeling's Wide Strip Mill at Steubenville" it was stated that "the wide strip mill is the most highly powered continuous mill at present in operation." The statement was true when the article was written some months ago. Since then, however, Inland Steel Co. has started its wide strip mill which has considerably more horsepower on its main roll drives than does that at Steubenville.

Briggs & Turivas, Chicago, dealers in scrap iron and steel, have purchased the Akron, Bedford, Cleveland division of the Northern Ohio Interurban line. The 54 miles of track will be dismantled.

### The Week's Prices, Cents Per Pound for Early Delivery

	May 25	May 26	May 27	May 28	May 31
Lake copper, New York.....	5.50	5.50	5.50	5.50	5.50
Electrolytic copper, N. Y.*.....	5.12½	5.12½	5.12½	5.12½	5.12½
Straits tin, spot, N. Y.....	20.87½	20.62½	20.50	.....	20.50
Zinc, East St. Louis.....	2.87½	2.87½	2.87½	2.87½	2.87½
Zinc, New York.....	3.24½	3.24½	3.24½	3.24½	3.24½
Lead, St. Louis.....	2.90	2.90	2.90	2.90	2.90
Lead, New York.....	3.00	3.00	3.00	3.00	3.00

\*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

Aluminum, 98 to 99 per cent pure, 22.90c. a lb., delivered.

Nickel, electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.

Antimony, 5.12½c. a lb., New York.

Brass ingots, 85-5-5-5, 6.00c. a lb., New York and Philadelphia.

### From New York, Warehouse

#### Delivered Prices, Base per Lb.

Tin, Straits pig.....	22.00c. to 23.00c.
Tin, bar.....	24.00c. to 26.00c.
Copper, Lake.....	7.50c. to 8.50c.
Copper, electrolytic.....	7.25c. to 8.25c.
Copper, casting.....	7.00c. to 8.00c.
*Copper sheets, hot-rolled.....	14.87½c.
*High brass sheets.....	12.00c.
*Seamless brass tubes.....	15.25c.
*Seamless copper tubes.....	14.37½c.
*Brass rods.....	9.75c.
Zinc, slab.....	4.25c. to 4.75c.
Zinc sheets (No. 9), casks.....	9.25c. to 9.50c.
Lead, American pig.....	4.00c. to 4.50c.
Lead, bar.....	5.75c. to 6.75c.
Lead sheets.....	7.50c.
Antimony, Asiatic.....	8.25c. to 9.25c.
Alum., virgin, 99 per cent plus.....	23.30c.
Alum. No. 1 for remelting, 98 to 99 per cent.....	16.00c. to 17.00c.
Solder, ½ and ⅓.....	14.75c. to 15.75c.

\*These prices are also for delivery from Chicago and Cleveland warehouses.

### Metals from Cleveland Warehouse

#### Delivered Prices per Lb.

Tin, Straits pig.....	24.00c.
Tin, bar.....	26.00c.
Copper, Lake.....	6.50c.

Copper, electrolytic.....	6.50c.
Copper, casting.....	6.25c.
Zinc, slab.....	4.25c. to 4.50c.
Lead, American pig.....	3.75c. to 4.00c.
Lead, bar.....	7.25c.
Antimony, Asiatic.....	10.00c.
Babbitt metal, medium grade.....	14.50c.
Babbitt metal, high grade.....	28.00c.
Solder, ½ and ⅓.....	16.00c.

### Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible.....	4.00c.	4.625c.
Copper, hvy. and wire.....	3.875c.	4.375c.
Copper, light and bottoms.....	2.875c.	3.75c.
Brass, heavy.....	1.75c.	2.250c.
Brass, light.....	1.25c.	1.75c.
Hvy. machine composition.....	2.75c.	3.25c.
No. 1 yel. brass turnings.....	2.00c.	2.50c.
No. 1 red brass or compos. turnings.....	2.50c.	3.00c.
Lead, heavy.....	2.00c.	2.375c.
Zinc.....	1.00c.	1.375c.
Cast aluminum.....	3.00c.	4.00c.
Sheet aluminum.....	7.75c.	9.00c.



# Prices of Finished and Semi-Finished Steel, Coke, Coal, Cast Iron Pipe

## BARS, PLATES, SHAPES

### Iron and Steel Bars

Soft Steel		Base per Lb.
Pittsburgh mill	.....	1.60c.
Chicago	.....	1.70c.
Philadelphia	.....	1.91c.
New York	.....	1.95c.
Detroit	.....	1.80c.
Cleveland	.....	1.65c.
Lackawanna	.....	1.70c.
Birmingham	.....	1.75c.
C.I.F. Pacific ports	.....	2.00c.

### Billet Steel Reinforcing

P'gh mills, 40, 50, 60-ft.	.....	1.60c.
Birmingham, mill lengths	.....	1.75c.
Cleveland	.....	1.50c.

### Rail Steel

P'gh mills, east of Chicago dist.	.....	1.20c. to 1.35c.
Chicago Heights mills	.....	1.50c. to 1.60c.

### Iron

Common iron, f.o.b. Chicago	.....	1.65c.
Refined iron, f.o.b. P'gh mills	.....	2.75c.
Common iron, del'd Philadelphia	.....	2.11c.
Common iron, del'd New York	.....	2.15c.

### Tank Plates

Base per Lb.	
Pittsburgh mill	..... 1.60c.
Chicago	..... 1.70c.
Birmingham	..... 1.75c.
Del'd Cleveland	..... 1.8035c.
Del'd Philadelphia	..... 1.7935c.
Del'd Coatesville	..... 1.70c.
Del'd Sparrows Point	..... 1.70c.
Del'd Lackawanna	..... 1.70c.
Del'd New York	..... 1.888c.
C.I.F. Pacific ports	..... 1.90c.

### Structural Shapes

Base per Lb.	
Pittsburgh mill	..... 1.60c.
Chicago	..... 1.70c.
Birmingham	..... 1.75c.
Del'd Cleveland	..... 1.8035c.
Del'd Philadelphia	..... 1.7935c.
Del'd Coatesville	..... 1.70c.
Del'd Sparrows Point	..... 1.70c.
Del'd Lackawanna	..... 1.70c.
Del'd New York	..... 1.888c.
C.I.F. Pacific ports (standard)	..... 2.00c.
C.I.F. Pacific ports (wide flange)	..... 2.10c.

### Steel Sheet Piling

Base per Lb.	
Pittsburgh	..... 1.90c.
Chicago mill	..... 2.05c.
Buffalo	..... 2.00c.

### Alloy Steel Bars

Alloy Quantity Bar Base, 2.65c. per Lb.	
S.A.E. Alloy Differential per 100 Lb.	
2000 (1% Nickel)	..... 0.25
2100 (1 1/2% Nickel)	..... 0.55
2300 (3 1/2% Nickel)	..... 1.50
2500 (5% Nickel)	..... 2.25
3100 Nickel Chromium	..... 0.55
3200 Nickel Chromium	..... 1.35
3300 Nickel Chromium	..... 3.80
3400 Nickel Chromium	..... 3.20
4100 Chromium Molybdenum (0.16 to 0.25 Molybdenum)	..... 0.50
4200 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	..... 0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.50 to 2.00 Nickel)	..... 1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	..... 0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	..... 0.45
5100 Chromium Spring Steel	..... 0.20
5100 Chromium Vanadium Bar	..... 1.20
6100 Chromium Vanadium Spring Steel	..... 0.95
9250 Silicon Manganese Spring Steel (flats)	..... 0.25
Round and squares	..... 0.50
Chromium Nickel Vanadium	..... 1.50
Carbon Vanadium	..... 0.95

Above prices are for hot-rolled steel bars, forging quality. The differentials for cold-drawn bars is 1/2c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a section area of 16 in. or over carry the billet price. Slabs with section area of less than 16 in. or less than 2 1/2 in. thick, regardless of sectional area, take the bar price.

### Cold Finished Bars\*

Base per Lb.	
Pittsburgh mill	..... 1.70c.
Chicago	..... 1.70c.
Cleveland	..... 1.70c.
Buffalo	..... 1.70c.
Shipping, ground, f.o.b. mill	..... 1.70c.
Shipping, ground, f.o.b. mill	..... 1.70c.
Shipping, ground, f.o.b. mill	..... 1.70c.

\*In quantities of 10,000 lb. or more.  
\*According to size.

## SHEETS, STRIP, TIN PLATE, TERNE PLATE

### Sheets

Hot-rolled		Base per Lb.
No. 10 f.o.b. Pittsburgh	.....	1.55c.
No. 10 f.o.b. Chicago mill	.....	1.65c.
No. 10 del'd Philadelphia	.....	1.80c.
No. 10, f.o.b. Birmingham	.....	1.70c.
No. 10, c.i.f. Pacific Coast ports	.....	2.32 1/2c.

### Hot-Rolled and Annealed

No. 10, Pittsburgh	.....	1.70c.
No. 10, Chicago mills	.....	1.80c.
No. 10, Birmingham	.....	1.85c.

### Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	.....	2.20c.
No. 24, f.o.b. Chicago mills	.....	2.30c.
No. 24, del'd Philadelphia	.....	2.40c. to 2.51c.
No. 24 f.o.b. Birmingham	.....	2.35c.
No. 24, c.i.f. Pacific Coast ports	.....	2.85c.

### Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh	.....	2.25c.
No. 10 gage, f.o.b. Chicago mills	.....	2.35c.
No. 10 gage, del'd Philadelphia	.....	2.40c.

### Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh	.....	2.75c.
No. 20 gage, f.o.b. Chicago mills	.....	2.85c.
No. 20 gage, del'd Philadelphia	.....	3.00c.

Automobile Body Sheets  
No. 20, f.o.b. Pittsburgh... 2.85c. to 2.90c.

Steel Furniture Sheets  
No. 10, f.o.b. Pittsburgh... 2.65c.  
No. 20, f.o.b. Pittsburgh... 3.15c.

(Prices on furniture stock include stretcher leveling but not resquaring.)

### Galvanized Sheets

No. 24, f.o.b. Pittsburgh	.....	2.85c.
No. 24, f.o.b. Chicago mills	.....	2.95c.
No. 24, del'd Philadelphia	.....	3.10c.
No. 24, f.o.b. Birmingham	.....	3.00c.
No. 24, c.i.f. Pacific Coast ports	.....	3.50c.

### Long Termes

No. 24, unassorted, 8-lb. coating, f.o.b. P'gh	.....	2.80c. to 3.00c.
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### Vitreous Enameling Stock

No. 10, f.o.b. Pittsburgh	.....	2.60c.
No. 20, f.o.b. Pittsburgh	.....	3.10c.

### Tin Mill Black Plate

No. 28 f.o.b. Pittsburgh	.....	2.40c.
No. 28 Chicago mill	.....	2.50c.

### Tin Plate

Base per Box	
Standard cokes, f.o.b. P'gh district mills	..... \$4.75
Standard cokes, f.o.b. Gary	..... 4.85

Terne Plate  
(F.o.b. Morgantown or Pittsburgh)  
(Per Package, 20 x 28 in.)

8-lb. coating I.C.	..... \$9.50
15-lb. coating I.C.	..... 12.00
20-lb. coating I.C.	..... 13.00
25-lb. coating I.C.	..... 14.10
30-lb. coating I.C.	..... 14.90
40-lb. coating I.C.	..... 16.70

### Hot-rolled Hoops, Bands and Strips

Base per Lb.	
6 in. and narrower, Pittsburgh	..... 1.50c. to 1.60c.
Wider than 6 in., P'gh	..... 1.40c. to 1.50c.
6 in. and narrower, Chicago	..... 1.60c. to 1.70c.
Wider than 6 in., Chicago	..... 1.50c. to 1.60c.
Cooperage stock, P'gh	..... 1.60c. to 1.70c.
Cooperage stock, Chicago	..... 1.70c. to 1.80c.

### Cold-Rolled Strips

F.o.b. Pittsburgh	..... 2.00c.
F.o.b. Cleveland	..... 2.00c.
Del'd Chicago	..... 2.30c.
F.o.b. Worcester	..... 2.20c.
Fender stock, No. 20 gage, Pittsburgh or Cleveland	..... 2.90c. to 3.00c.

## WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland)  
(After Dec. 31, extras of 10c. a 100 lb. on mixed and joint carloads, 25c. on pool carloads and 40c. on less than carloads will be applied on all merchant wire products.)

To Manufacturing Trade	
Bright wire	..... 2.20c.
Spring wire	..... 3.20c.

To Jobbing Trade	
Standard wire nails	..... \$1.95
Smooth coated nails	..... 1.95
Galvanized nails	..... 3.95

Base per Lb.	
Smooth annealed wire	..... 2.35c.
Smooth galvanized wire	..... 2.80c.
Polished staples	..... 2.50c.
Galvanized staples	..... 2.75c.

Barbed wire, galvanized	..... 2.60c.
Woven wire fence No. 9 gage, per net ton	..... \$55.00
Woven wire fence, No. 12 1/2 gage and lighter, per net ton	..... 60.00

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base; Duluth, Minn., and Worcester, Mass., mill \$2 a ton over Pittsburgh, and Birmingham mill \$3 a ton over Pittsburgh.

## STEEL PIPE AND TUBING

Welded Pipe  
Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld		Lap Weld	
Inches	Black Galv.	Inches	Black Galv.
1/2	47	1/2	25
3/4	53	3/4	25
1	58	1	30
1 1/4	62	1 1/4	33
1 1/2	64	1 1/2	37

Butt Weld, extra strong, plain ends		Lap Weld, extra strong, plain ends	
1/2	43	1/2	21
3/4	49	3/4	25
1	55	1	30
1 1/4	60	1 1/4	36
1 1/2	63	1 1/2	38

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discounts of 5 and 2 1/2%, and on galvanized by 1 1/2 points with supplementary discounts of 5 and 2 1/2%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2 1/2%.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh	
2 in. and 2 1/2 in.	..... 1 1/2 in.
3 in.	..... 2 in.
3 1/2 in.	..... 2 1/2 in.
4 in.	..... 3 in.
4 1/2 in. to 6 in.	..... 3 1/2 in.

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.	
1 in.	..... 61
1 1/2 in.	..... 53
2 in.	..... 37
2 1/2 in.	..... 32
3 in.	..... 40

Standard Commercial Seamless Boiler Tubes	
1 in.	..... 61
1 1/2 in.	..... 53
2 in.	..... 37
2 1/2 in.	..... 32
3 in.	..... 40

Hot Rolled	
2 and 2 1/2 in.	..... 38
2 1/2 and 3 in.	..... 46
3 in.	..... 52

Cold-Drawn	
1 1/2 in.	..... 46
2 in.	..... 48
2 1/2 in.	..... 51
3 in.	..... 40

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carloads lots. On less than carloads to 10,000 lbs., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lbs., base discounts are reduced 4 points with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. lighter than standard gages takes the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.	
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Seamless Mechanical Tubing	
Carbon, 0.10% to 0.30% base (carloads) 55	
Carbon, 0.30% to 40% base	..... 50
Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.	

## RAILS AND TRACK SUPPLIES

### Rails

Per Gross Ton	
Standard, f.o.b. mill	..... \$43.00
Light (from billets), f.o.b. mill	..... 32.00
Light (from rail steel), f.o.b. mill	..... \$28.00 to 30.00

### Track Equipment

Base per 100 Lb.	
Spikes, 9/16-in. and larger	..... \$3.60
Spikes, 1/2-in. and larger	..... 2.60
Spikes, hot and barge	..... 2.80
Tie plate, steel	..... 1.85
Angle bars	..... 2.75
Track bolts, to steam railroads	..... 3.50
Track bolts, to jobbers, all sizes, per 100 count	..... .73 per cent off list

## BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts  
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List	
Machine bolts	..... 75
Carriage bolts	..... 75
Lag bolts	..... 75
Plow bolts, Nos. 1, 2, 3 and 7 heads	..... 75
Hot-pressed nuts, blank or tapped, square	..... 75
Hot-pressed nuts, blank or tapped, hexagons	..... 75
C.p.e. and t. square or hex. nuts, blank or tapped	..... 75
Washers	..... 7.00c. to 6.75c. per lb. off list

\* F.o.b. Chicago, New York and Pittsburgh.  
† Bolts with rolled thread up to and including 1/2 in. x 6 in. take 10 per cent lower list prices.

## Bolts and Nuts

Per Cent Off List	
Semi-finished hexagon nuts	..... 75
Semi-finished hexagon castellated nuts	..... 75
S.A.E. bolts	..... 75
Stove bolts in packages, P'gh	..... 75
Stove bolts in packages, Chicago	..... 75
Stove bolts in pkgs., Cleveland	..... 75
Stove bolts in bulk, P'gh	..... 75
Stove bolts in bulk, Chicago	..... 75
Stove bolts in bulk, Cleveland	..... 75
Tire bolts	..... 60 and 10

Discount of 75 per cent off on bolts and nuts applies on carload business with jobbers and large consumers.

## Large Rivets

Base per 100 Lb.	
F.o.b. Pittsburgh or Cleveland	..... \$2.25
F.o.b. Chicago	..... .70, 10 and 5

## Small Rivets

Per Cent Off List	
F.o.b. Pittsburgh	..... 70, 10 and 5
F.o.b. Cleveland	..... 70, 10 and 5
F.o.b. Chicago	..... 70, 10 and 5

## Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

Per Cent Off List	
Milled cap screws	..... 80, 10, 10 and 5
Milled standard set screws, case hardened	..... 80 and 5
Milled headless set screws, cut thread	..... 75 and 10
Upset hex. head cap screws, U.S.S.S. or S.A.E. thread	..... 85 and 10 to 85, 10, 10 and 5
Upset set screws	..... 80, 10 and 5
Milled studs	..... 75

## SEMI-FINISHED STEEL

### Billets and Blooms

Per Gross Ton	
Re-rolling, 4-in. and under	..... \$26.00 to \$28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00
Re-rolling, 4-in. and under	..... 26.00 to 28.00

### Sheet Bars

Per Gross Ton	
Pittsburgh	..... \$26.00 to \$28.00
Youngstown	..... 26.00 to 28.00
Cleveland	..... 26.00 to 28.00

### Slabs

Per Gross Ton	
Pittsburgh	..... \$26.00 to \$28.00
Youngstown	..... 26.00 to 28.00
Cleveland	..... 26.00 to 28.00

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(F.o.b. Pittsburgh or Youngstown)	
Grooved	Per Lb. 1.60c.
Universal	1.60c.
Sheared	1.60c.

<b>Wire Rods</b>	
(Common soft, base)	
	Per Gross Ton
Pittsburgh	\$37.00
Cleveland	37.00
Chicago	38.00

## COKE, COAL AND FUEL OIL

<b>Coke</b>	
	Per Net Ton
Furnace, f.o.b. Connellsville	\$2.00 to \$2.25
Foundry, f.o.b. Connellsville	3.00 to 4.25
Foundry, by-product, Chicago	7.00
Foundry, by-product, New England, delivered	10.00
Foundry, by-product, Newark or Jersey City, del'd	8.35 to 8.75
Foundry, by-product, Phila.	9.00
Foundry, by-product, Cleveland, delivered	7.82
Foundry, by-products, St. Louis, f.o.b. ovens	8.00
Foundry, by-products, del'd St. Louis	9.00

<b>Coal</b>	
	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.40 to \$1.50
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.60
Gas coal, 1/4-in., f.o.b. Pa. mines	1.70 to 1.80
Mine run gas coal, f.o.b. Pa. mines	1.50 to 1.60
Steam slack, f.o.b. W. Pa. mines	0.50 to 0.65
Gas slack, f.o.b. W. Pa. mines	0.50 to 0.65

<b>Fuel Oil</b>	
	Per Gal. f.o.b. Bayonne, N. J.
No. 3 distillate	4.00c.
No. 4 industrial	3.50c.
	Per Gal. f.o.b. Baltimore
No. 3 distillate	3.50c.
No. 4 industrial	3.25c.
	Per Gal. del'd Chicago
No. 3 industrial fuel oil	2.65c.
No. 5 industrial fuel oil	2.45c.
	Per Gal. f.o.b. Cleveland
No. 3 industrial fuel oil	4.62 1/2c.
No. 4 distillate	3.87 1/2c.

## REFRACTORIES

<b>Fire Clay Brick</b>	
	Per 1000 f.o.b. Works
High-heat	Intermediate
Duty Brick	Duty Brick
Penn.	\$35.00 \$25.00 to \$30.00
Maryland	35.00 25.00 to 30.00
New Jer.	\$44.00 to 57.00
Ohio	35.00 25.00 to 30.00
Kentucky	35.00 25.00 to 30.00
Missouri	35.00 30.00
Illinois	35.00 25.00 to 30.00
Ground fire clay, per ton	6.50

<b>Chrome Brick</b>	
	Per Net Ton
Standard size	\$42.50

<b>Silica Brick</b>	
	Per 1000 f.o.b. Works
Pennsylvania	\$38.00
Chicago	47.00
Birmingham	50.00
Silica clay, per ton	8.0

<b>Magnesite Brick</b>	
	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	\$61.50
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	38.50
Domestic, f.o.b. Chewelah, Wash.	20.90

## CAST IRON PIPE

	Per Net Ton
6-in. and larger, del'd	
Chicago	\$36.40 to \$38.40
4-in., del'd Chicago	39.40 to 41.40
6-in. and larger, del'd New York	28.20
4-in., del'd New York	31.20
6-in. and larger, Birm'ham	\$32.00 to \$35.00
4-in., Birmingham	35.00 to 36.00
Class "A" and gas pipe, \$3 extra.	

## VALLEY

Per gross ton, f.o.b. Valley furnace:	
Basic	\$14.00
Bessemer	15.00
Gray iron	14.50
No. 2 foundry	14.50
No. 3 foundry	14.00
Malleable	15.00
Low phos., copper free	25.00

Freight rate to Pittsburgh or Cleveland district, \$1.80.

## PITTSBURGH

Per gross ton, f.o.b. Pittsburgh district furnace:	
Basic	\$14.50
No. 2 foundry	15.50
No. 3 foundry	15.00
Malleable	15.50
Bessemer	15.50

Freight rates to points in Pittsburgh district range from 69c. to \$1.26.

## CHICAGO

Per gross ton at Chicago furnace:	
N't'n No. 2 fdy.	\$16.00
N't'n No. 1 fdy.	16.50
Malleable, not over 2.25 sil.	16.00
High phosphorus	16.00
Lake Super. charcoal, sil.	23.17
Southern No. 2 fdy.	16.14
Low phos., sil. 1 to 2, copper free	27.50
Silvery, sil. 8 per cent.	23.67
Bess. ferro-sil. 15 per cent	28.92

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnaces, not including a switching charge.

## ST. LOUIS

Per gross ton at St. Louis:	
No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.	\$17.50
Malleable, f.o.b. Granite City	17.50
Northern No. 2 fdy., del'd	\$18.30 to 18.80
Southern No. 2 fdy., del'd	14.56
Northern malleable, del'd	18.30 to 18.80
Northern basic, del'd	18.30 to 18.80

Freight rates 83c. (average) Granite City to St. Louis; \$2.30 from Chicago; \$4.56 from Birmingham.

## NEW YORK

Per gross ton, delivered New York district:	
*Buffalo, No. 2, del'd east.	
N. J.	\$17.01 to \$18.41
East. Pa. No. 2 fdy.	15.52 to 15.77
East. Pa. No. 2X fdy.	16.02 to 16.27

Freight rates: \$1.52 to \$2.63 from eastern Pennsylvania.  
\*Prices delivered to New Jersey cities having rate of \$3.41 a ton from Buffalo.

## BUFFALO

Per gross ton, f.o.b. furnace:	
No. 2 fdy.	\$16.00
No. 2X fdy.	16.50
No. 1 fdy.	17.50
Malleable, sil. up to 2.25	16.50
Basic	15.50
Lake Superior charcoal, del'd	23.41

## NEW ENGLAND

Per gross ton delivered to most New England points:	
*Buffalo, sil.	1.75 to 2.25, \$19.54 to \$20.01
*Buffalo, sil.	2.25 to 2.75, \$19.54 to \$20.01
*Ala., sil. 1.75 to 2.25	19.74
*Ala., sil. 2.25 to 2.75	20.24
*Ala., sil. 1.75 to 2.25	15.88
*Ala., sil. 2.25 to 2.75	16.28

Freight rates: \$5.04 all rail from Buffalo; \$9.75 all rail from Alabama and \$5.88 rail and water from Alabama to New England seaboard.  
\*All rail rate.  
†Rail and water rate.

## CINCINNATI

Per gross ton, delivered Cincinnati:	
Ala. fdy., sil. 1.75 to 2.25	\$13.82
Ala. fdy., sil. 2.25 to 2.75	14.32
Tenn. fdy., sil. 1.75 to 2.25	13.82
N't'n No. 2 foundry	\$17.01 to 17.50
S't'n Ohio silvery, 8%	21.02

Freight rates, \$2.02 from Ironton and Jackson, Ohio; \$3.82 from Birmingham.

## PHILADELPHIA

Per gross ton at Philadelphia:	
East. Pa. No. 2	\$14.84 to \$15.34
East. Pa. No. 2X	15.34 to 15.84
East. Pa. No. 1X	15.84 to 16.34
Basic del'd east. Pa.	16.00
Malleable	18.00 to 18.50
east. Pa. furnace	22.00 to 23.00
Cop. b'g low phos. (f.o.b. furnace)	22.00 to 22.50

# Pig Iron, Ores, Ferroalloys

Va. No. 2 plain	22.04
Va. No. 2X	22.54

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 84c. to \$1.79 from eastern Pennsylvania furnaces; \$4.67 from Virginia furnaces.

## CLEVELAND

Per gross ton at Cleveland furnace:	
N't'n No. 2 fdy. (local delivery)	\$15.50
S't'n fdy., sil. 1.75 to 2.25	16.14
Malleable (local delivery)	15.50
Ohio silvery, 8 per cent.	21.87
Stand. low phos., Valley	25.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 55c. average local switching charge; \$3.12 from Jackson, Ohio; \$6.14 from Birmingham.

## BIRMINGHAM

Per gross ton, f.o.b. Birmingham dist. furnaces:	
No. 2 fdy., 1.75 to 2.25 sil.	\$11.00
No. 2 soft, 2.25 to 2.75 sil.	11.50
Basic	11.00

## CANADA

Per gross ton:	
Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$22.60
No. 2 fdy., sil. 1.75 to 2.25	22.10
Malleable	22.60

Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$24.00
No. 2 fdy., sil. 1.75 to 2.25	23.50
Malleable	24.00
Basic	\$23.00 to 23.50

## Ferromanganese

Domestic, 80%, seaboard	\$72.00 to \$75.00
Foreign, 80%, Atlantic or Gulf port, duty paid	\$72.00 to 75.00

\*Minimum price quoted for lots of 2000 tons or more.

## Spiegeleisen

Per Gross Ton Furnace	
Domestic, 10 to 21%	\$26.00 to \$27.00

## Electric Ferrosilicon

Per Gross Ton Delivered	
50% (carloads)	\$77.50
50% (less carloads)	85.00
75% (carloads)	128.00
75% (less carloads)	136.00
14% to 16% (f.o.b. Welland, Ont., in carloads)	31.00
14% to 16% (less carloads)	36.00

## Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace	
Per Gross Ton	
10%	\$20.50
11%	21.00
12%	21.50
13%	22.50
14%	23.50
15%	24.00
16%	25.00
17%	26.50

## Silvery Iron

F.o.b. Jackson County, Ohio, Furnace	
Per Gross Ton	
6%	\$18.00
7%	18.50
8%	18.75
9%	19.00
10%	19.50
11%	20.00
12%	20.50
13%	21.50
14%	22.50
15%	23.50
16%	24.00
17%	25.50

## Other Ferroalloys

Ferrotungsten, per lb. wo. del. carloads	\$1.08
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Ferrotungsten, less carloads	\$1.15 to 1.25
Ferrocromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	10.00c.
Ferrocromium, 2% carbon	17.00c. to 17.50c.
Ferrocromium, 1% carbon	19.00c. to 20.00c.
Ferrocromium, 0.10% carbon	23.50c. to 25.00c.
Ferrocromium, 0.06% carbon	25.50c. to 27.00c.
Ferrovandium, del., per lb. contained Va.	\$3.05 to \$3.50
Ferrocobaltitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	140.00
Ferrophosphorus, electric, or blast furnace material, in carloads, 18% Rockdale, Tenn., base	65.00
Ferromolybdenum, per lb. Mo., del.	95c.
Calcium molybdate, per lb. Mo., del.	80c.
Ferrophosphorus, electric, 24% f.o.b. Anniston, Ala., per gross ton	\$91.00
Silico spiegel, per ton, f.o.b. furnace, car lots	42.50
Ton lots or less, per ton	47.50
Silico-manganese, gross ton, delivered:	
2.50% carbon grade	105.00
1% carbon grade	115.00
Spot prices	\$5 a ton higher

## Ores

Lake Superior Ores, Delivered Lower Lake Ports

Per Gross Ton	
Old range Bessemer, 51.50% iron	\$4.30
Old range non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.65
Mesabi non-Bessemer, 51.50% iron	4.60
High phosphorus, 51.50% iron	4.40
Foreign Ore, c.i.f. Philadelphia or Baltimore	

Per Unit	
Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algerian	8c. to 8.50c.
Iron, low phos., Swedish, average 68 1/2% iron	9.00c.
Iron, basic or foundry, Swedish, average 65% iron	8.00c.
Iron, basic and foundry, Russian, aver. 63% iron (nom.)	9.00c.
Manganese, Caucasian, washed 52% Mn.	24.00c.
Manganese, African, Indian, 50-52%	23c. to 24c.
Manganese, Brazilian, 48%	21c. to 22c.

Per Gross Ton	
Tungsten, Chinese wolframite	\$10.75 to \$11.00
Tungsten, domestic scheelite	\$10.00 to 10.50
Chrome, 45%, Cr2O3, crude, c.i.f. Atlantic seaboard	18.00
Chrome, 48%, Cr2O3, c.i.f. Atlantic seaboard	20.00

## Fluorspar

Per Net Ton	
Domestic, washed gravel, 85-5, Kentucky and Illinois mines, freight allowed, Pittsburgh basis	\$20.31
No. 2 lump, 85-5, Kentucky and Illinois mines, freight allowed, Pittsburgh basis	22.31
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid, \$17.00 to Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silicon, f.o.b. Illinois and Kentucky mines	\$2.90

# Iron and Steel Scrap

## PITTSBURGH

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$9.00 to \$10.00
No. 2 heavy melting steel	7.75 to 8.25
No. 2 railroad wrought	9.25 to 9.75
Scrap rails	9.25 to 9.75
Rails 3 ft. and under	10.50 to 11.00
Sheet bar crops, ordinary	9.50 to 10.00
Compressed sheet steel	8.75 to 9.25
Hand bundled sheet steel	7.75 to 8.25
Hvy. steel axle turnings	7.75 to 8.25
Machine shop turnings	5.50 to 6.00
Short shov. steel turnings	5.50 to 6.00
Short mixed borings and turnings	5.50 to 6.00
Cast iron borings	5.50 to 6.00
Cast iron carwheels	9.50 to 10.00
Heavy breakable cast	7.50 to 8.00
No. 1 cast	8.50 to 9.50
Railr. knuckles and couplers	9.50 to 10.00
Rail, coil and leaf springs	9.50 to 10.00
Railr. steel wheels	9.50 to 10.00
Low phos. billet crops	12.00 to 12.50
Low phos. sheet bar crops	11.00 to 11.50
Low phos. plate scrap	10.00 to 10.50
Low phos. punchings	10.00 to 10.50
Steel car axles	13.00 to 13.50

## CHICAGO

Delivered Chicago district consumers:	
Per Gross Ton	
Heavy melting steel	\$6.00 to \$6.50
Shoveling steel	6.00 to 6.50

Frogs, switches and guards	6.00 to 6.50	6.50
Hydraulic comp. sheets	4.75 to 5.25	5.25
Drop forge flashings	4.50 to 5.00	5.00
No. 1 busheling	4.50 to 5.00	5.00
Roller carwheels	7.00 to 7.50	7.50
Railroad tires	8.00 to 8.50	8.50
Railroad leaf springs	8.00 to 8.50	8.50
Steel couplers and knuckles	6.00 to 6.50	6.50
Coil springs	8.00 to 8.50	8.50
Axle turnings (elec.fur.)	5.00 to 5.50	5.50
Low phos. punchings	7.50 to 8.00	8.00
Low phos. plates, 12 in. and under	7.00 to 7.50	7.50
Cast iron borings	3.25 to 3.75	3.75
Short shoveling turnings	3.25 to 3.75	3.75
Machine shop turnings	2.75 to 3.25	3.25
Rolling rails	8.00 to 8.50	8.50
Steel rails, less than 3 ft.	8.00 to 8.50	8.50
Steel rails, less than 2 ft.	8.50 to 9.00	9.00
Angle bars steel	7.00 to 7.50	7.50
Cast iron carwheels	6.25 to 6.75	6.75
Railroad malleable	5.50 to 6.00	6.00
Agricultural malleable	3.50 to 4.00	4.00
*Relaying rails, 56 to 60 lb.	15.00 to 17.00	17.00
*Relay rails, 65 lb. and up	18.00 to 25.00	25.00
Per Net ton		
Iron angle and splice bars	\$5.75 to \$6.50	\$6.50
Iron arch bars, transoms	5.25 to 5.75	5.75
Iron car axles	11.50 to 12.50	12.50
No. 1 railroad wrought	8.25 to 8.75	8.75
No. 2 railroad wrought	5.25 to 5.75	5.75
No. 1 busheling	4.00 to 4.50	4.50



No. 2 bushing...	\$2.00 to \$2.50
Automotive tires, smooth...	7.50 to 8.50
and flues...	2.50 to 3.00
No. 1 machinery cast...	6.50 to 7.00
Automotive cast...	6.25 to 6.75
No. 1 railroad cast...	5.25 to 5.75
Automotive cast...	5.00 to 5.50
No. 1 agricultural cast...	4.50 to 5.00
Automotive cast...	5.25 to 5.75
No. 2 shoes...	5.50 to 6.00

Shipping rails, including angle bars and match, are quoted f.o.b. dealers' yards.

#### PHILADELPHIA

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel...	\$6.00 to \$6.50
No. 2 heavy melting steel...	4.50 to 5.00
Hot-rolled wrought...	7.00 to 7.50
Hot-rolled sheets...	4.50 to 5.00
Hot-rolled compressed, new...	5.00 to 5.50
Hot-rolled compressed, old...	4.50 to 5.00
Machine shop turnings...	3.50 to 4.00
Hot-rolled axle turnings...	5.50 to 6.00
Hot-rolled borings (nom.)...	3.00 to 3.50
Hot-rolled breakable cast...	8.00 to 8.50
Hot-rolled plate (steel works)...	6.00 to 6.50
Hot-rolled low phosphorus heavy...	9.50 to 10.00
Hot-rolled knuckles...	7.00 to 7.50
Hot-rolled blast furnace (nom.)...	3.00 to 3.50
Hot-rolled iron and steel pipe...	5.50 to 6.00
Hot-rolled axle...	10.00 to 11.00
Hot-rolled force fire...	13.50 to 14.00
Hot-rolled iron car wheels...	5.50 to 6.00
Hot-rolled cast...	9.00 to 9.50
Hot-rolled cast...	8.00 to 8.50
Hot-rolled borings (chem.)...	8.00 to 10.50
Hot-rolled rails for rolling...	9.00 to 9.50

#### CLEVELAND

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel...	\$6.75 to \$7.00
No. 2 heavy melting steel...	6.00 to 6.50
Hot-rolled sheet steel...	6.75
Hot-rolled bundled sheet stamp...	5.25 to 5.75
Hot-rolled force fire...	5.00
Machine shop turnings...	3.75 to 4.00
Hot-rolled shoveling turnings...	5.00 to 5.25
No. 1 bushing...	6.00 to 6.25
Hot-rolled axle turnings...	6.50 to 7.00
Hot-rolled phosphorus, billet crops...	9.00 to 10.00
Hot-rolled iron borings...	4.00 to 4.50
Hot-rolled borings and short...	4.00 to 4.50
No. 2 bushing...	4.00 to 4.50
No. 1 cast...	7.50 to 8.00
Hot-rolled grate bars...	6.00 to 6.50
Hot-rolled plate...	6.00 to 6.50
Hot-rolled under 3 ft. and...	10.00 to 10.50
Hot-rolled for rolling...	9.00 to 9.50
Hot-rolled malleable...	7.50 to 8.00
Hot-rolled iron car wheels...	7.50 to 8.00

#### BUFFALO

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel...	\$6.50 to \$7.00
No. 2 heavy melting steel...	5.00
Hot-rolled sheet steel...	6.75 to 7.25
Hot-rolled hydraulic comp. sheets...	5.00
Hot-rolled hydraulic comp. sheets...	4.00
Hot-rolled force fire...	5.00
No. 1 bushing...	5.00
Hot-rolled axle turnings...	6.50
Machine shop turnings...	5.00
Hot-rolled knuckles and couplers...	10.00
Hot-rolled and leaf springs...	10.00
Hot-rolled steel wheels...	10.00
Hot-rolled phosphorus, billet crops...	10.00 to 11.00
Hot-rolled shoveling turnings...	6.00 to 6.50
Hot-rolled mixed borings and...	5.00
Hot-rolled turnings...	5.00
Hot-rolled iron borings...	5.00
No. 2 bushing...	3.50 to 4.00
Hot-rolled axle...	10.00 to 11.00
Hot-rolled axle...	10.00 to 11.00
No. 1 machinery cast...	9.00 to 9.50
No. 1 cupola cast...	8.25 to 8.75
Hot-rolled plate...	7.25 to 7.50
Hot-rolled rails, 3 ft. and...	9.50 to 10.00
Hot-rolled iron car wheels...	8.00 to 9.00
Hot-rolled industrial malleable...	8.00 to 8.50
Hot-rolled malleable...	8.00 to 8.50
Hot-rolled chemical borings...	7.50 to 8.00

#### BIRMINGHAM

Per gross ton delivered consumers' yards:	
Heavy melting steel...	\$7.50 to \$8.00
Hot-rolled steel rails...	7.50 to 8.00
Hot-rolled shoveling turnings...	6.00
Hot-rolled plate...	6.00
Hot-rolled axle...	9.00
Hot-rolled axle...	9.00
No. 1 railroad wrought...	4.50 to 5.00
Hot-rolled for rolling...	8.00 to 8.50
No. 1 cast...	8.00 to 8.50
Hot-rolled wheels...	5.00 to 5.50
Hot-rolled iron borings, chem...	8.50

#### ST. LOUIS

Dealers' buying prices per gross ton:	
Selected heavy steel...	\$6.75 to \$7.25
No. 1 heavy melting...	6.25 to 6.75
No. 2 heavy melting...	5.50 to 6.00
No. 1 locomotive tires...	4.75 to 5.25
Hot-rolled stand-er, rails...	6.50 to 7.00
Hot-rolled springs...	7.50 to 8.00
Hot-rolled sheets...	4.25 to 4.75
No. 2 railroad wrought...	6.25 to 6.75
No. 1 bushing...	5.00 to 5.50
Hot-rolled iron borings and...	4.75 to 5.25
Hot-rolled turnings...	7.00 to 7.50
Hot-rolled for rolling...	8.00 to 8.50
Hot-rolled machine shop turnings...	3.00 to 3.50
Hot-rolled heavy turnings...	5.00 to 5.50
Hot-rolled axle...	9.50 to 10.00
Hot-rolled iron car wheels...	12.50 to 13.00
Hot-rolled iron bars and trans...	5.00 to 5.50
No. 1 railroad wrought...	4.75 to 5.25
Hot-rolled rails less than 3 ft...	8.50 to 9.00
Hot-rolled angle bars...	6.50 to 7.00

Cast iron car wheels...	5.50 to 6.00
No. 1 machinery cast...	7.50 to 8.00
Railroad malleable...	4.75 to 5.25
No. 1 railroad cast...	5.75 to 6.25
Stove plate...	6.00 to 6.50
Relay, rails, 60 lb. and...	16.00 to 16.50
Relay, rails, 70 lb. and...	20.00 to 21.00
Over...	5.00 to 5.50
Agricult. malleable...	5.00 to 5.50

#### NEW YORK

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel...	\$4.00 to \$4.50
No. 2 heavy melting steel...	2.00 to 2.25
Heavy melting steel (yard)...	1.50 to 2.00
No. 1 hvy. breakable cast...	4.50 to 4.75
Stove plate (steel works)...	2.25 to 2.75
Machine shop turnings...	0.50 to 1.00
Short shoveling turnings...	0.50 to 1.00
Cast borings...	0.50 to 1.00
Hot-rolled sheets...	0.50 to 1.00
Steel car axles...	9.75 to 10.00
Iron car axles (nom.)...	14.00 to 14.50
Spec. iron and steel pipe...	2.00 to 2.50
Forge fire...	3.25
No. 1 railroad wrought...	4.00 to 4.50
No. 1 yard wrought...	3.25 to 3.50
Rails for rolling...	5.00 to 5.50
No. 1 cast...	5.00 to 5.25
No. 2 cast...	4.00 to 4.50
Stove plate (foundry)...	3.25
Malleable cast (railroad)...	4.50 to 5.00
Cast borings (chemical)...	6.00 to 6.50

Per gross ton, delivered local foundries:

No. 1 machinery cast...	\$8.00
No. 1 hvy. cast (cupola size)...	7.50
No. 2 cast...	6.50

#### PITTSBURGH

Base per Lb.	
Plates...	2.85c
Structural shapes...	2.85c
Soft steel bars and small shapes...	2.60c
Reinforcing steel bars...	2.60c
Cold-finished and screw stock...	2.95c
Squares and flats...	1.45c
Hoops...	2.95c
Hot-rolled annealed sheets (No. 24)...	3.15c
Galv. sheets (No. 24), 25 or more...	3.45c
Hot-rolled sheets (No. 10)...	3.10c
Galv. corrug. sheets (No. 28), per...	\$3.74
square (less than 3750 lb.)...	2.50c
Spikes, large...	2.50c
Small...	2.75c to 2.90c
Boat...	3.00c
Track bolts, all sizes, per 100 count...	70 and 10 per cent off list
Machine bolts, 100 count...	70 and 10 per cent off list
Carriage bolts, 100 count...	70 and 10 per cent off list
Nuts, all styles, 100 count...	73 and 10 per cent off list
Large rivets, base per 100 lb...	\$3.00
Wire, black, soft ann'd, base per...	100 lb...
Wire, galv. soft, base per 100 lb...	3.20
Common wire nails, per keg...	2.35
Cement coated nails, per keg...	2.35

#### CHICAGO

Base per Lb.	
Plates and structural shapes...	3.00c
Soft steel bars...	2.75c
Reinforcing bars, billet steel 1.65c...	1.75c
Rail steel reinforcement (No. 22)...	2.55c
Cold-fn. steel bars and shafting...	1.45c
Rounds and hexagons...	3.10c
Flats and squares...	3.60c
Bands, 3/4 in. (in Nos. 10 and...	12 gages)...
Hoops (No. 14 gage and lighter)...	2.95c
Hot-rolled annealed sheets (No. 22)...	3.50c
Galv. sheets (No. 24)...	4.10c
Hot-rolled sheets (No. 10)...	3.20c
Spikes (3/4 in. and lighter)...	3.45c
Track bolts...	4.30c
Rivets, structural...	3.75c
Rivets, boiler...	3.75c

On plates, structural, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders of 400 to 999 lb.

#### NEW YORK

Base per Lb.	
Plates and struc. shapes...	2.70c to 3.10c
Soft steel bars, small shapes...	2.70c to 3.10c
Iron bars, Swed. charcoal...	6.00c to 6.50c
Cold-fn. shafting and screw stock...	3.40c
Rounds and hexagons...	3.40c
Flats and squares...	3.90c
Cold-rolled strip, soft and quarter...	4.95c
Hard...	7.50 to 8.00
Hoops...	3.75c
Bands...	3.40c
Hot-rolled sheets (No. 10)...	3.00c to 3.25c
Hot-rolled ann'd sheets (No. 24)...	3.50c
Galvanized sheets (No. 24)...	4.50c
Standard tool steel...	12.00c
Wire, black annealed (No. 10)...	3.60c
Wire, galv. annealed (No. 10)...	4.05c
Tire steel, 3/4 x 1/2 in. and larger...	3.40c
Smooth finish, 1 to 2 1/2 x 1/4 lb...	4.00c
Open-hearth spring steel, bases...	4.50c to 7.00c
Common wire nails, base, per keg...	\$2.60

#### BOSTON

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel...	\$3.35
Scrap T rails...	3.35
Machine shop turnings...	0.80 to 1.00
Cast iron borings...	2.00 to 2.10
Bundled skeleton, long...	3.00 to 3.50
Forge flashings...	0.90 to 1.00
Blast furnace scrap...	3.00 to 3.25
Forge scrap...	9.50 to 10.00
Shafting...	9.00 to 9.50
Steel car axles...	1.00 to 1.25
Wrought pipe...	6.00 to 6.50
Rails for rolling...	7.00 to 7.25
Cast iron borings, chemical...	7.00 to 7.25

Per gross ton delivered consumers' yards:

Textile cast...	\$7.00 to \$7.50
No. 1 machinery cast...	7.50 to 8.00
Stove plate...	5.00 to 5.25
Railroad malleable...	10.50 to 11.00

#### CINCINNATI

Dealers' buying prices per gross ton:	
Heavy melting steel...	\$5.00 to \$6.00
Scrap rails for melting...	7.00 to 7.50
Loose sheet clippings...	1.50 to 2.00
Bundled sheets...	3.75 to 5.25
Cast iron borings...	2.75 to 3.25
Machine shop turnings...	3.25 to 3.75
No. 1 bushing...	4.25 to 4.75
No. 2 bushing...	2.50 to 3.00
Rails for rolling...	8.00 to 8.50
No. 1 locomotive tires...	7.50 to 8.00
Short rails...	9.50 to 10.00
Cast iron car wheels...	7.50 to 8.00
No. 1 machinery cast...	10.00 to 10.50
No. 1 railroad cast...	7.50 to 8.00

## Warehouse Prices for Steel Products

Machine bolts, cut thread...	Per Cent Off List
3/4 x 6 in. and smaller...	65 to 65 and 10
1 x 3/8 in. and smaller...	65 to 65 and 10
Carriage bolts, cut thread...	Per Cent Off List
3/4 x 6 in. and smaller...	65 to 65 and 10
3/4 x 2 1/2 in. and smaller...	65 to 65 and 10
Boiler tubes...	Per 100 ft.
Lap welded, 2-in...	19.00
Seamless welded, 2-in...	29.25
Charcoal iron, 2-in...	26.25
Charcoal iron, 4-in...	67.00

\*No. 28 and lighter, 36 in. wide, 20c higher per 100 lb.

#### ST. LOUIS

Base per Lb.	
Plates and struc. shapes...	3.25c
Bars, soft steel or iron...	3.00c
Cold-fn. rounds, shafting, screw...	3.35c
Hot-rolled annealed sheets (No. 24)...	3.35c
Galv. sheets (No. 24)...	4.35c
Hot-rolled sheets (No. 10)...	3.45c
Black corrug. sheets (No. 24)...	3.85c
Galv. corrug. sheets...	4.40c
Structural rivets...	4.00c
Boiler rivets...	4.00c

Per Cent Off List

Tank rivets, 3/4 in. and smaller, 100...	65
Less than 100 lb. or more...	60
Machine bolts...	70
Carriage bolts...	70
Lag screws...	70
Hot-pressed nuts, sq. blank or...	70
tapped, 200 lb. or more...	60
Hot-pressed nuts, hex. blank or...	70
tapped, 200 lb. or more...	60
Less than 200 lb...	60

#### PHILADELPHIA

Base per Lb.	
Plates and struc. shapes...	2.95c
Soft steel bars...	2.75c
Reinforcing steel bars...	1.75c to 1.95c
Cold-fn. rounds and hex...	2.95c
Cold-fn. flats and sq...	3.45c
Hoops and bands, No. 12 to 3/4 in...	3.60c
Hoops and bands, No. 13 and lighter...	3.55c
Cold-finished strip...	5.55c
Hot-rolled annealed sheets (No. 24)...	3.25c
Galvanized sheets (No. 24)...	3.75c
Hot-rolled sheets (No. 10)...	3.00c
Black ann'd wire, per 100 lb...	\$2.75
No. 10 galv. wire, per 100 lb...	\$2.29
Com. wire nails, base per keg...	2.35

\*Net base, including boring and cutting to length.

#### CINCINNATI

Base per Lb.	
Plates and struc. shapes...	3.25c
Bars, soft steel or iron...	3.00c
New billet reinforce bars...	3.00c
Rails steel reinforce bars...	3.00c
Hoops...	3.90c
Bands...	3.20c

Burnt cast...	4.25 to 4.75
Stove plate...	3.25 to 3.75
Agricultural malleable...	7.75 to 8.25
Railroad malleable...	8.00 to 8.50

#### DETROIT

Dealers' buying prices per gross ton:	
Hvy. melting steel...	\$4.75 to \$5.25
Borings and short turn...	2.00 to 2.50
Long turnings...	1.50 to 2.00
No. 1 machinery cast...	7.50 to 8.00
Automotive cast...	9.75 to 10.25
Hydraulic comp. sheets...	4.50 to 5.00
Stove plate...	3.50 to 4.00
New No. 1 bushing...	3.75 to 4.25
Old No. 2 bushing...	1.50 to 2.00
Sheet clippings...	1.00 to 1.50
Flashings...	3.75 to 4.25

#### CANADA

Dealers' buying prices per gross ton:	
Heavy melting steel...	7.00 to \$6.00
Rails, scrap...	7.00 to 8.00
No. 1 wrought...	6.00 to 8.00
Machine shop turnings...	2.00 to 2.50
Boiler plate...	5.00 to 5.50
Heavy axle turnings...	2.50 to 3.00
Cast borings...	2.00 to 2.50
Steel borings...	2.00 to 2.50
Wrought pipe...	2.00 to 2.50
Steel axles...	7.00 to 8.00
Axles, wrought iron...	7.00 to 11.00
No. 1 machinery cast...	12.50 to 19.00
Stove plate...	10.00 to 8.00
Standard car wheels...	1.00 to 8.50
Malleable...	10.00 to 8.00

Cold-fn. rounds and hex...	3.50c
Squares...	4.00c
Hot-rolled annealed sheets (No. 24)...	3.75c
Galv. sheets (No. 24)...	4.25c
Hot-rolled sheets (No. 10)...	3.30c
Structural rivets...	4.20c
Small rivets...	60 per cent off list
No. 9 ann'd wire, per 100 lb...	\$3.60
Com. wire nails, base per keg (10...	to 49 kegs)...
Larger quantities...	2.50
Cement c'd nails, base 100-lb. keg...	2.95
Chain, per 100 lb...	10.25
Seamless steel boiler tubes, 2-in...	per 100 ft.
4-in...	36.00
Lap-welded steel boiler tubes, 2-in...	16.50
4-in...	34.50

#### BUFFALO

Base per Lb.	
Plates and struc. shapes...	3.25c
Soft steel bars...	3.00c
Reinforcing bars...	2.65c
Cold-fn. flats and sq...	3.65c
Rounds and hex...	3.15c
Cold-rolled strip steel...	5.25c
Hot-rolled annealed sheets (No. 24)...	3.70c
Galv. sheets (No. 24)...	4.10c
Bands...	3.35c
Hoops...	3.90c
Hot-rolled sheets (No. 10)...	3.50c
Com. wire nails, base per keg...	\$2.45



# PLANT EXPANSION AND EQUIPMENT BUYING

## Orders for \$175,000 Worth of Presses Placed

Briggs Mfg. Co., Detroit, Buys 12 Large  
Machines—Business Generally  
Is Dull

**T**HE Briggs Mfg. Co., Detroit, has placed orders for about \$175,000 worth of presses with the E. W. Bliss Co., Brooklyn, and the Toledo Machine & Tool Co., Toledo, Ohio. The orders were for six large and six medium-size presses. This was the outstanding machinery order of the week. Machine tool business

generally has shown no improvement; in fact, the dullness of recent weeks seems to be more pronounced.

The United States Army Air Corps, Wright Field, Dayton, Ohio, has issued an inquiry for 15 13-in. motor-driven tool room lathes and 15 motor-driven wood-working machines, including mortisers, shapers, lathes and sur-

facers. These are to go to various airports in the United States and its island possessions. Bids for the wood-working machines will be taken June 8 and bids on the metal-working machines on June 13.

Purchases by private industries are awaiting both a pick-up in general business and in the credit situation.

### ◀ SOUTH ATLANTIC ▶

**Constructing Quartermaster**, Langley Field, Va., asks bids until June 22 for two 25,000 gal. gasoline storage tanks, control equipment, fill and delivery lines.

**General Utilities Co.**, 254 West Tazewell Street, Norfolk, Va., is planning purchase of overhead electric traveling crane, 8 to 10-ton capacity, 35 to 40 ft. span.

**Department of Public Works**, Baltimore, has plans for new municipal incinerator works to cost over \$200,000 with unloading, conveying, power equipment and other machinery. Another similar plant will be built later.

**Division of Purchases and Sales**, Department of Commerce, Washington, asks bids until June 6 for 10 to 50 automatic keying devices, and 10 to 20 motors (Proposal 24413); 7 to 18 link circuit relays (Proposal 24414); until June 7 for 25 to 100 astronomic time switches (Proposal 24408); 80 to 100 light sensitive devices (Proposal 24412); until June 9 for 20 to 50 direct-connected gasoline-driven engine generators, 800-watt capacity (Proposal 24409); until June 10 for 30 to 50 3-kva. engine alternators, 20 to 80 similar engine units, 20 to 120 auxiliary 10-gal. water tanks, and 5 to 20 sets of pipe and fittings (Proposal 24410).

**Bureau of Yards and Docks**, Navy Department, Washington, asks bids (no closing date stated) for air-conditioning system, with underground mains, electric manhole and electric ducts for naval air station, Pensacola, Fla. (Specification 6882); bids (no closing date stated) for steam converters, coil type water heaters, etc., at marine barracks, Quantico, Va. (Specification 6809).

**Finley Machinery Co.**, Valdosta, Ga., has plans for one-story shop unit, 65 x 100 ft. Cost close to \$22,000 with equipment.

**American Eisgas Corp.**, Jacksonville, Fla., H. H. Buckman & Co., Jacksonville, consulting engineers and managers, has arranged with Crocker-Wheeler Electric Mfg. Co., Ampere, N. J., for production of parts for Eisgas specialties, including home gas generators, air conditioning equipment for railroads and kindred products. An assembling plant will be operated by first noted company at Jacksonville, John W. Love is president.

**Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until June 7 for one screw-cutting precision back-gear lathe (Schedule 8126), one precision tool room lathe (Schedule 8124), combination grinding and buffing machine (Schedule 8128), one drill press and spare parts (Schedule 8127), one geared head lathe (Schedule 8125) all motor driven, for Norfolk Navy Yard; one crane truck, 3000-lb. capacity (Schedule 8161) for Hampton Roads Navy Yard; two motor-generator sets, 3.5-kva. capacity and spare parts (Schedule 8131) for Portsmouth Navy Yard; hammers, mallets and sledges (Schedule 8107),

hammer, file and tool handles (Schedule 8106), nine motor-driven dustless portable sanding machines (Schedule 8123) for Eastern and Western yards; until June 14 for motor-generator equipment and spare parts (Schedule 8169) for Washington Navy Yard; 2000 non-watertight hand portables (Schedule 8148) for Portsmouth yard.

### ◀ CENTRAL DISTRICT ▶

**United States Engineer Office**, Pittsburgh, plans early call for bids for new roller type dam on Big Kanawha River, near Marmet. Plans at office of chief of engineers, Washington, for final approval.

**Board of Education**, Ariel Building, McKeesport, Pa., has plans for new multi-story industrial and vocational school. Cost close to \$500,000 with equipment. C. R. Moffitt, Masonic Building, is architect.

**American Can Co.**, New Castle, Pa., is increasing production at local plant, primarily for tin milk containers.

**Midland Barge Co.**, Midland Pa., has secured contract for two twin screw, tunnel type, steel towboats, each 1000-hp. rating, from Federal Barge Line, Inland Waterways Corp., Washington, at \$194,000. Each boat will be 160 ft. long, 40 ft. wide and 8 ft. deep.

**Standard Oil Co.**, Midland Bank Building, Cleveland, has awarded general contract to Austin Co. for bulk oil storage and distributing plant. Cost close to \$50,000 with equipment.

**Clay Products Railway Co.**, Negley, Ohio, care of William B. Moore, Lisbon, Ohio, attorney, recently organized with capital of \$200,000, plans 12-mile railroad line from Negley to mouth of Beaver Creek, near Smith's Ferry, Pa., with purchase of rolling stock, box cars for handling raw clay and other products. James E. White, head of West Darlington Clay Co., West Darlington, Middleton Township, Pa., is one of heads of new company.

**White Motor Co.**, 842 East Seventy-ninth Street, Cleveland, has secured order for 10 six-wheel motor trucks and 10 trailers from Iraq Petroleum Co., London, England, totaling about \$100,000, for use in connection with construction of oil pipe line in Iraq.

**Medusa Portland Cement Co.**, Engineers Building, Cleveland, has resumed full time production schedule at mill at West York, Pa., following curtailment for several weeks, and will give employment to about 150 men on 12-hr. day basis.

**Fox Paper Co.**, Lockland, Ohio, plans rebuilding part of mill in Sharonville district recently destroyed by fire. Loss over \$200,000 with equipment.

**Board of Education**, Logan, Ohio, has authorized installation of manual training de-

partment in one-story addition, 90 x 150 ft., to high school, for which bids have been asked on general contract. B. M. Coakley, Nelsonville, Ohio, is architect.

**Contracting Officer**, Material Division, Wright Field, Dayton, Ohio, asks bids until June 7 for 15 portable air compressors (Circular 430), 36 electric water coolers (Circular 433), five motor-driven metal cut-off saws (Circular 434), 25 finder assemblies, vertical view (Circular 431), 103 film safe cabinets, 41 hoods or covers, 41 bases (Circular 435), 150 drafting chairs with locking attachment for screw adjustment (Circular 438).

**Ford Motor Co.** is increasing production at assembling plant at Cincinnati and working force will be advanced. Similar increased production will be carried out at assembling plant at Columbus, Ohio, where force will be advanced from 600 to 900 men.

**Addressograph-Multigraph Co.**, Babbitt Road, Cleveland, has increased production schedule for manufacture of multigraphs, addressographs and other business machines, running on a five-day week basis, with some departments working on night schedule.

**Wilcox Non-Glare Reflector Co.**, Indianapolis, care of Roy L. Volstad, Meyer Kiser Bank Building, has been organized by Harry E. Wilcox and Albert Hauser, Indianapolis, to manufacture reflectors and other automotive equipment.

**Stutz Motor Car Co.**, 1102 North Capitol Avenue, Indianapolis, has advanced its production schedule from five to six days a week, with close to normal working quota.

**Lever Brothers Co.**, Hammond, Ind., manufacturer of soaps, washing powders, etc., has awarded general contract to Fred C. Rowley, 5231 Hohman Street, for four-story and basement addition and extensions in power department. Cost over \$400,000 with equipment. Stone & Webster Engineering Co., Boston, is engineer. Company headquarters are at 164 Broadway, Cambridge, Mass.

**Detroit Edison Co.**, 2000 Second Avenue, Detroit, has plans for an addition to steam-operated electric power plant on Lyncaste Avenue. Cost over \$75,000 with equipment.

**Construction Quartermaster**, Selfridge Field, Mich., asks bids until June 22 for gasoline storage tanks and control equipment; until June 24 for night lighting system installation.

**Department of Municipal Waste**, 2655 Franklin Street, Detroit, has plans for four municipal incinerator plants, two of 600 tons capacity each, one 400 tons, and one 200 tons, with unloading, conveying and other equipment. Cost over \$1,000,000. J. S. Stringham is city engineer, in charge. It is expected to ask bids in July.

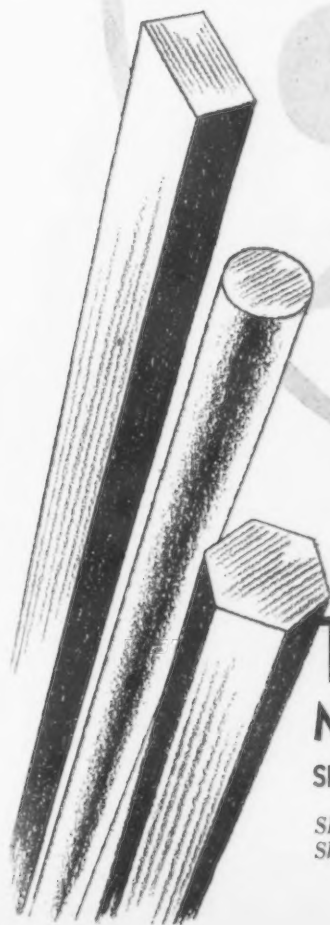
**Metal Planes, Inc.**, Detroit, has been organized with capital of \$150,000 to manufacture airplanes and parts. Company is headed by



# SEYMOUR PHOSPHOR BRONZE

**E**SPECIALLY today when false economy born of panic is making the purchasing of materials more and more of a speculation, the staunch integrity and steadfastly maintained high quality of Seymour Products provide a lighthouse in the fog.

The many orders from fabricators who use Seymour Phosphor Bronze exclusively in their products are an overwhelming tribute of their confidence. Constant care and rigid inspection insure absolute uniformity of Phosphor Bronze Sheets, Wire and Rods that are accurate to specifications and worthy of incorporation into the finest products made.



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SEYMOUR 1878-1932 CONNECTICUT

SEYMOUR NICKEL SILVER and PHOSPHOR BRONZE  
Sheets—Wire—Rods—Also Nickel Anodes—Cast or Rolled



Alfred Heum, 1939 Glendale Street, Detroit, and Earl Puterbaugh, Royal Oak, Mich.

**Rockne Motors Corp.**, Piquette Street, Detroit, an interest of Studebaker Co., South Bend, Ind., is running on five day week production schedule.

**United States Engineer Office**, Detroit, asks bids until June 7 for two bronze ring gears and two steel worm gears (Circular 40).

## ◀ NEW ENGLAND ▶

**Board of Trustees**, Amherst College, Amherst, Mass., has plans for a new mechanical and service building. Cost over \$65,000 with equipment.

**Star Tool & Mfg. Co., Inc.**, Bridgeport, Conn., has been organized by J. A. Rusnak, 888 Kings Highway, and E. G. Westberg, 126 Merritt Street, both Fairfield, Conn., with capital of \$50,000, to manufacture tools and other mechanical specialties.

**Bethlehem Shipbuilding Corp.**, Boston, is giving employment to force of about 4700 men at Fore River shipyard.

**Marshall Chromium Plating Works, Inc.**, Lynn, Mass., has been organized by William O. Frechette and Charles Bengin, 657 Washington Street, to operate a metal plating plant.

**Malco Mfg. Co.**, Bridgeport, Conn., recently organized with capital of \$25,000 by Howard B. Martin, Bridgeport, and associates, has leased part of former plant of Locomobile Co. of America for manufacture of special screw machine products. Mr. Martin was formerly general superintendent at Bridgeport plant of Columbia Phonograph Co. and will be president of Malco company.

**Hood Rubber Co.**, Nichols Avenue, East Watertown, Boston, a division of B. F. Goodrich Rubber Co., 27 West Sixtieth Street, New York, is increasing production and reinstating a number of employees.

**G. & L. Oil Burner Corp.**, Hartford, Conn., has been organized by Abraham Grobard, 72 Mansfield Street, and Gabriel Levine, 417 Garden Street, to manufacture oil burners and oil burning equipment.

## ◀ SOUTH CENTRAL ▶

**Suck Creek Coal Mining Co.**, Chattanooga, Tenn., recently organized by L. T. Dicks, 125 Market Street, and associates, has taken over coal properties in Suck Creek district, and plans erection of tipples for capacity of 400 to 500 tons daily, with other mining and operating machinery. Cost over \$70,000 with machinery.

**Constructing Quartermaster**, Maxwell Field, Ala., asks bids until June 24 for two 25,000-gal. gasoline storage tanks, with control equipment, fill and delivery lines, etc.

**Ford Motor Co.** has resumed operations at branch assembling plant at Arabi, near New Orleans, on six-day week basis, giving employment to about 1000 men. Working quota will be advanced soon to 1500 men.

**Weston M. Fulton**, 4275 Lyons View Park, Knoxville, Tenn., and associates have leased metal mining properties of Annette Mining Co., Croker Creek district, near Tellico Plains, Tenn., and plans development and operation of mines, including installation of mining equipment, handling facilities, etc.

**R. L. Crook**, 1042 Sheridan Avenue, Shreveport, La., is at head of project to build a gasoline refining plant in Gregg County oil field district. Cost about \$50,000 with equipment.

**Canal Steel Works, Inc.**, 2126 Poland Street, New Orleans, which is in bankruptcy, will sell its shop equipment at public auction on Wednesday, June 8, beginning at 11 a. m. I. B. Rennyson is auctioneer.

## ◀ PACIFIC COAST ▶

**Board of County Supervisors**, Hall of Records, Los Angeles, has plans for one-story addition, 50 x 100 ft., to mechanical shop at 1701 Zonal Street. William Davidson, Hall of Records, is County mechanical engineer in charge.

**Construction Quartermaster**, San Rafael, Cal., asks bids until June 20 for water distribution and gas distribution system at Hamilton Field, Cal., also electric distribution system, gasoline oil storage and distribution system, switching station, transformer station, gas meter house, etc., for same field.

**Kittell Vacuum Muffler Co.**, Los Angeles, care of Loucks & Phister, Bank of San Pedro

Building, San Pedro, attorneys, has been organized by J. C. Kittell, Sr. and son, Los Angeles, to manufacture automotive equipment, mufflers and other mechanical specialties.

**Q.R.S. Neon Corp.**, 306 Seventh Street, San Francisco, manufacturer of electric tube lighting specialties, let general contract to J. D. Hannah, 251 Kearny Street, for one-story plant. Cost about \$25,000 with equipment. Dodge Riedy, Pacific Building, is architect; Hyman Rosenthal, 821 Market Street, is engineer.

**Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until June 7 for two elevating trucks, 6000-lb. capacity (Schedule 8157), ten stationary fire extinguishers (Schedule 8135), 86,300 lb. hull plate steel (Schedule 8117); until June 14 for lighting and power cable and wire (Schedule 8137), steel conduits and fittings, insulating tape, cable grips, fuse links, safety switches, etc. (Schedule 8138) for Mare Island Navy Yard; four turbine-driven generator sets and spare parts (Schedule 8168) for Puget Sound Navy Yard; two trailers (Schedule 8166) for Fort Lewis, Wash.

**Hood River Apple Growers Association**, Hood River, Ore., plans rebuilding cold storage and refrigerating plant, known as Van Horn cold storage plant, recently destroyed by fire. Loss over \$65,000 with machinery.

**Bureau of Reclamation**, Denver, asks bids until June 6 for radial gate-hoisting equipment for Prosser, Wash., power canal headworks, including two radial gate hoists, one motor-driven shaft, four geared gate hoists, two worm gear gate hoists, four shafts and four geared gate hoists (Specification 571-D).

**Ford Motor Co.** has opened its new branch assembling plant at Seattle, giving employment to about 600 men on full time schedule.

**Department of Agriculture**, Division of Purchase, Sales and Traffic, Washington, asks bids until June 10 for one electric pumping system for Walla Walla, Wash. (Proposal 1943).

## ◀ MIDDLE WEST ▶

**Goss Printing Press Co.**, 1535 South Paulina Street, Chicago, manufacturer of printing presses, parts, etc., is considering establishment of plant at Holland, Mich., removing present works to that place.

**Mattson Wire & Mfg. Co.**, Joliet, Ill., recently organized with capital of \$100,000 to manufacture fencing and other wire products, has changed its name to Mattson Fence Co.

**Ford Motor Co.** is reopening different branch assembling plants in Middle West, including works at Denver, closed last January, with employment of about 700 men, force to be doubled within next 30 days; assembling plant at Des Moines, Iowa, where about 500 men have been recalled, quota to be advanced soon by 200 to 300 men; assembling works at Omaha, Neb., where several hundred men resumed May 25 on full time, five-day week basis; assembling plant at Milwaukee, where about 700 men are employed, to be stepped-up soon with additional workers.

**Signal Corps**, Procurement District, 1819 West Pershing Road, Chicago, asks bids until June 7 for quantity of cable terminals (Circular 59), ironclad telephones (Circular 58), and telephone switchboards (Circular 57).

**Swift & Co.**, Union Stock Yards, Chicago, contemplate new packing plant unit at Spencer, Iowa. Cost about \$40,000 with equipment.

**Closure Lock Corp.**, 2506 Clybourn Avenue, Chicago, has been organized by Milton H. Borzin and Michael N. Bugaren, capital of

\$60,000, to manufacture patented locks and locking devices.

**George P. Nichols & Brother, Inc.**, Chicago, recently organized to succeed to partnership of George P. Nichols & Brother, 2139 Fulton Street, manufacturer of machinery and parts, has formed Stearns-Stafford Roller Bearing Division to operate former Stearns-Stafford Roller Bearing Co., Lawton, Mich., lately acquired as a subsidiary. Production will be continued under new name for roller bearings for heavy industrial service and kindred specialties.

**North Star Concrete Co.**, Mankato, Minn., manufacturer of reinforced-concrete pipe for highways, railways and other heavy service, has taken over plant of Bland Engineering Co., 459 N. E. Harding Street, Minneapolis, for new works at that location. Plant at Mankato will be continued.

**Common Council**, Mayville, N. D., asks bids until June 6 for one centrifugal motor-driven pumping unit with accessories, capacity 350 gal. a min., for municipal filtration plant.

**Acme Oil Heating Corp.**, 731 North LaSalle Street, Chicago, has been organized by Adam Gabriel and William C. Gibson, to manufacture oil heating equipment, oil burners and kindred products.

## ◀ MILWAUKEE ▶

**Combined Locks Paper Co.**, Combined Locks, Wis., placed general contract with C. R. Meyer & Sons Co., 50 State Street, Oshkosh, Wis., for construction of two process buildings, 48 x 72 and 40 x 50 ft., respectively, and mill extension, 60 x 180 ft., costing about \$80,000 with equipment. W. K. Kolb is plant engineer.

**Green Bay Wire Works**, Green Bay, Wis., has been incorporated with \$100,000 capital stock to manufacture wire, wire cloth, screens, etc. Principals are M. D. Smiley, William A. Strassburger and Alfred C. Bosser, 306 Insurance Building, Appleton, Wis. Production plans not yet disclosed.

**A. M. Mattison**, 827 Eddy Street, Eau Claire, Wis., is starting work on foundry and pattern shop extension, 40 x 60 ft.

**Delta Chemical & Iron Co.**, Escanaba, Mich., has resumed operations with force of 85 after being shut down for several months.

**Milwaukee Reliance Boiler Works**, 2784 North Thirty-second Street, Milwaukee, reports new orders making necessary increased production schedule from 7 to 9 hr. a day and addition to working force.

**Richland Center, Wis.**, Common Council closes bids June 15 for furnishing one 500-hp. water tube boiler, underfeed stoker, automatic force draft, soot blowers, etc., for municipal electric light plant. Guy C. Luckey is city clerk.

**Station WEBC, Inc.**, Superior, Wis., will begin work about July 1 on new radio transmitter, costing between \$50,000 and \$75,000. W. C. Bridges is general manager.

## ◀ SOUTHWEST ▶

**State Highway Department**, Jefferson City, Mo., has asked bids on general contract for equipment storage and distributing plant, one and two-stories, at St. Joseph, Mo., with service, repair and garage facilities for motor trucks and cars. Cost about \$70,000 with equipment. Similar two-story unit will be built at Hannibal, Mo. Cost about \$55,000 with equipment.

**Major Oil & Refining Co.**, Oklahoma City, Okla., H. C. Fox, 2329 North Flynn Street, in charge, is planning extensions and improvements in oil refinery, including additional equipment. Cost about \$45,000 with equipment.

**Sinclair Prairie Oil Marketing Co.**, Oklahoma City, Okla., has been organized by officials of Sinclair Consolidated Oil Corp., New York, with capital of \$1,000,000, to operate in Oklahoma and Panhandle oil field district. Company will take over and build oil storage and distributing plants for crude oil, pipe lines, etc.

**Mid-West Screw Products Co.**, St. Louis, has been organized by John T. Soy, 4502 Harris Street, and associates to manufacture screw machine products and kindred specialties.

**Marland Oil Co. of Oklahoma, Inc.**, Ponca City, Okla., has been formed by E. W. Marland, Ponca City, formerly head of the Marland Oil & Refining Co., later taken over by Continental Oil Co., and associates, capital





# A practical solution in MAKING "PARTS"

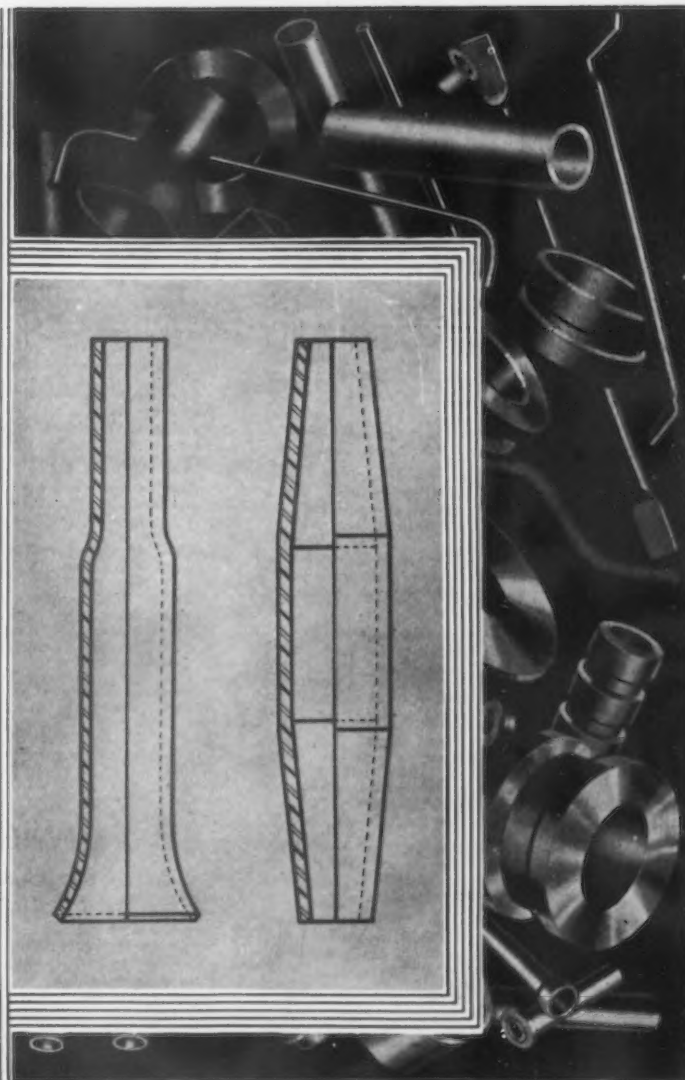
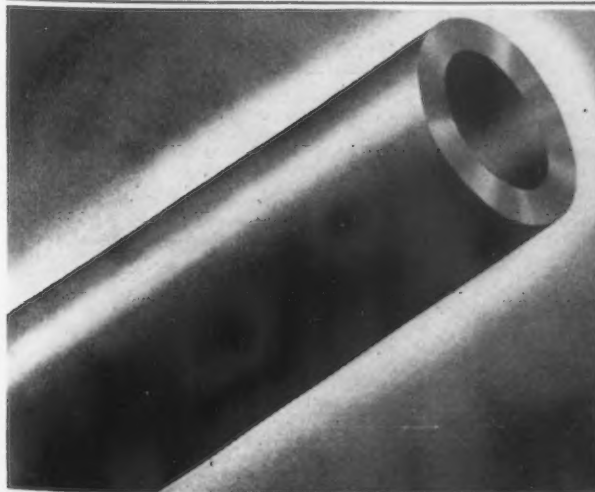
Lower production costs, due to simplified procedure, naturally follow the adoption of NATIONAL-SHELBY Seamless Tubing instead of solid stock or forgings, in the making of mechanical parts. As for uniformity of output, the efficient methods in manufacture and rigid inspection given this tubing will assure satisfaction to any inquirer on this point.

Is this more efficient method applicable to any of your requirements? Probably! For NATIONAL-SHELBY Tubing serves purposes as widely variant as those of a hypodermic needle on the one hand and a Diesel engine air flask on the other. In the automotive industry it has been largely and variously employed for years for such parts as axles, axle housings, drive shafts, drive shaft housings, tie rods, steering columns, steering rods, and numerous smaller parts such as piston pins, bushings, etc.

Shapes, sizes, wall-thicknesses, grades, and anneals are made for a great diversity of needs. Send for our booklet, "Seamless Tube Standards". It will give you complete information on NATIONAL-SHELBY—

*America's Preferred Seamless Tubing*

NATIONAL TUBE COMPANY · Pittsburgh, Pa.  
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**NATIONAL  
SHELBY  
SEAMLESS  
TUBING**



\$1,000,000, to operate oil properties, including refineries and distributing plants.

**Marshfield Packing Co.**, Marshfield, Mo., recently organized by Orville E. Jennings and Roy E. Wallace, Marshfield, contemplates erection of meat packing plant. Cost close to \$25,000 with equipment.

**Board of Public Works**, Topeka, Kan., will take bids soon for motor-driven pumping unit with accessories, capacity about 4000 gal. a min., for installation in North Topeka pumping plant. W. E. Baldry is city engineer.

**Constructing Quartermaster**, Fort Sam Houston, Tex., asks bids until June 22 for gasoline fueling system at army airdrome, Tucson, Ariz.

**Valley Refining Co.**, McAllen, Tex., has work under way on a new oil refinery. Cost over \$50,000 with equipment. Walter K. Campbell is head.

**Pure Air Corp.**, Kansas City, Mo., has been organized by A. B. Collins, 5911 Grand Street, and associates to manufacture air-conditioning and other mechanical draft equipment.

**Tidal Oil Co.**, Tulsa, Okla., affiliated with Tide Water Associated Oil Co., 17 Battery Place, New York, has acquired properties of Texas Gulf Producing Co., in east Texas oil fields, for increased production in that area for gasoline and other oil output. About \$300,000 was given for properties.

## ◀ NORTH ATLANTIC ▶

**Colonial Wrought Iron Products Co., Inc.**, Bronx, New York, has been organized to manufacture iron specialties. Company is headed by J. M. A. Cassel, 2474 Grand Avenue, and Harry Christine, 730 East 236th Street.

**Board of Education**, Dobbs Ferry, New York, plans manual training department in new two-story school. Cost \$785,000. Knappe & Morris, 171 Madison Avenue, New York, architects.

**Bagdad Copper Corp.**, 111 Broadway, New York, has plans for one-story addition, 90 x 300 ft., to former plant of Sandusky Glass Co., Sandusky, Ohio, recently acquired, for production of copper rods, wire, etc., under new process. Raw material will be secured from company mining properties near Hillsdale, Ariz. Pumping plant will be installed at Sandusky works for water supply.

**North German Lloyd Steamship Lines**, 57 Broadway, New York, has plans for new three-deck pier at foot of Canal Street and North River, 1020 ft. long and 125 ft. wide, and will equip lower deck for freight and cargo handling. Cost over \$650,000.

**Inwood Iron Works, Inc.**, New York, has been organized to take over and expand company of same name at 173 East Ninety-ninth Street, manufacturer of ornamental iron products. Morris and Walter Fleischer, 1334 East Ninth Street, Brooklyn, head new organization.

**Electro Chemical Engraving Co., Inc.**, 1100 Brook Avenue, New York, is considering an addition for storage and distribution. Cost over \$30,000 with equipment.

**Pyrene Mfg. Co., Inc.**, 560 Belmont Avenue, Newark, manufacturer of fire extinguishers and kindred products, is preparing for production of automobile tire chains at branch plant on Meeker Street. Operations will begin in about 30 days.

**Acme Steel Drum Co.**, Newark, care of David Silver, 31 Clinton Street, has been organized by Morris L. and Harry Cohen, Newark, to manufacture steel drums and kindred products.

**Arcturus Radio Tube Co.**, 120 Frelinghuysen Avenue, Newark, is running on a five-day week schedule, giving employment to close to normal working force, with some departments operating on full six-day week basis.

**Venino Brothers & Co., Inc.**, 65 Hamilton Street, Newark, electric motors, pulleys and kindred equipment, has purchased property at Hamilton and Liberty Streets, including three-story and four-story buildings, for expansion.

**Art Color Printing Co.**, South Washington Avenue, Dunellen, N. J., let general contract to Winton-Abbott Corp., 143 Liberty Street, New York, for one-story and basement addition, 50 x 200 ft. Cost over \$60,000 with equipment.

**Metropolitan Cement Corp.**, an interest of Edison Cement Co., 261 Fifth Avenue, New York, affiliated with Thomas A. Edison, Inc., West Orange, N. J., has taken title to former potash plant of Building Materials Corp., Raritan Township, N. J., and will remodel for new mill. Cost close to \$500,000 with machinery.

**Union Wire Frame Co.**, 115 New Street, Newark, has been organized with capital of \$125,000

to take over and expand company of same name, manufacturer of wire goods. I. Harold Meyerson and Murray Reiffin are incorporators of new company.

**Federal Telegraph Co.**, 200 Mount Pleasant Avenue, Newark, is running on increased production basis, giving employment to about 400 men, for manufacture of special transmitting station equipment and high power vacuum tubes. Company is also developing new products, include radio devices and equipment.

**Department of Public Safety**, City Hall, Philadelphia, Kern Dodge, director, asks bids until June 7 for steel guy wire, rubber-covered wire, traffic signal posts and other equipment for electrical bureau.

**Universal Lamp & Shade Co., Inc.**, Philadelphia, has leased two-story factory at 1141 North Second Street, for new plant for manufacture of lamps, shades, frames and kindred products.

**Excel Auto Radiator Co.**, 1825 South Michigan Avenue, Chicago, manufacturer of automobile radiators, etc., has leased 10,500 sq. ft. floor space, in building at 1421 Wallace Street, Philadelphia, for Eastern branch plant.

**Scranton School District**, Scranton, Pa., will install manual training department in three-story and basement junior high school, for which general contract has been let to William Steele & Sons Co., Fifteenth and Cherry Streets, Philadelphia. Cost about \$1,200,000 with equipment. Tudor R. Williams, Scranton Life Building, Scranton, is architect.

**Reading Co.**, Reading Terminal, Philadelphia, has asked bids on general contract for new power substation at Lansdale, Pa., to be used in connection with line electrification. Cost over \$40,000 with equipment. Clark Dillenberg is company engineer.

**Pneumatic Bucket & Machinery Mfg. Corp.**, Rochester, N. Y., has been organized by Frank A. and L. C. Buckland, 140 Shepard Street, capital \$300,000, to manufacture special machinery and equipment.

**Empire Gas & Electric Co.**, Geneva, N. Y., plans installation of transmission lines in part of Onondaga County. Cost over \$50,000.

**Alco Products, Inc.**, Dunkirk, N. Y., a division of American Locomotive Co., 30 Church Street, New York, has recently secured contract for two complete oil refinery plants for lubricating and process oil manufacture for La Plata Refinery of Government of Argentina. Buenos Aires. Equipment will be fabricated at Dunkirk works.

**Paterson Boiler & Tank Co.**, 150 Railroad Avenue, Paterson, N. J., recently organized, has taken over former plant of Samuel Smith & Son Co. for manufacture of storage tanks and other plate products.

## ◀ FOREIGN ▶

**Kokswerke und Chemische Fabriken A. G.** (Oberkoks), Berlin, Germany, manufacturer of industrial chemicals and operator of raw material properties, has acquired controlling interest in Borsig Werke, A. G., operating iron furnaces and coal mines in Upper Silesia. Purchasing company will consolidate with other interests in that district, including collieries, and will carry out expansion and development program.

**Municipality of Nancy**, France, is planning extensions and improvements in water supply system, including pipe lines, pumping equipment, filtration and sterilization machinery. New plant will have capacity for purifying about 100,000 cu. meters of water daily (about 3,531,400 cu. ft.).

**Soviet Russian Government**, Moscow, has authorized plans, to be completed in October, for erection of three hydroelectric generating plants in middle basin of Volga River, in Ivanovo-Voznesensk, Nijni-Novgorod and Perm districts, respectively, last noted to be located at mouth of Kama River. Three plants will be equipped for gross output of 1,000,000 kw., and will cost over 200,000,000 rubles (about \$100,000,000) with transmission systems. Government has purchased plant of Swedish General Electric Co. (ASEA), Stockholm, at Jaroslav, Russia, used for manufacture of electrical machinery, parts, materials, etc., and will continue as a Government-owned enterprise, with program for increased output. Amtorg Trading Corp., 261 Fifth Avenue, New York, is official buying agency.

**London, Midland & Scottish Railway**, London, England, is arranging an extensive construction program at locomotive shops at Crewe and Derby, to include building of 130 new locomotives during 1932.

## New Trade Publications

**Rolls and Rolling Mill Machinery.**—United Engineering & Foundry Co., Pittsburgh. Illustrated booklet present lists of equipment available for various types of rolling mills.

**Testing and Measuring Devices.**—Baldwin Southwark Corp., Philadelphia. Thirty-two page, illustrated booklet describes group of testing and measuring devices, based on use of carbon-pile resistors for measuring small motions.

**Electric Furnaces.**—General Electric Co., Schenectady, N. Y. Various types of G-E direct-heat, metallic-resistor electric furnaces are described and illustrated in a 24-page catalog.

**Sheets.**—Superior Sheet Steel Co., Canton, Ohio. "Galvanized" and "Super-Metal," two patented sheet products manufactured by the company, are described in 36-page booklet. A pictorial presentation of a number of practical applications of these products is included.

**Copper Molybdenum Iron Sheets.**—Republic Steel Corp., Youngstown, Ohio. A 64-page booklet contains information regarding Toncan copper-molybdenum sheets and illustrates various types of installations as well as several examples of performance under unusually severe conditions.

**Roller Chains and Sprockets.**—Chain Belt Co., Milwaukee. An attractively bound, 112-page catalog and engineering data book, containing prices, weights and information covering design and application of roller chains, block chains, leaf chains and cut tooth sprockets.

**Pyrometer Controllers.**—Bristol Co., Waterbury, Conn. Catalog 2050, 27 pages, illustrates and describes pyrometer controllers for automatic control of high temperatures.

**Rotary Hearth Furnace.**—W. S. Rockwell Co., 50 Church Street, New York. Catalog 322 describes rotary-hearth furnace for heat treating and forging ferrous and non-ferrous metals.

**Gas Holders.**—Stacey Brothers Gas Construction Division, International-Stacey Corp., Cincinnati. Illustrated 24-page catalog describes Stacey-Klonne dry-seal gas holders.

**Testing Instruments.**—R. Y. Ferner Co., Washington. Catalog H-1 describes pendulum type hardness tester and dwarf Brinell press.

**Boilers.**—Wilfred R. Wood and Irving Trust Co., receivers of Combustion Engineering Corp., New York. A bent-tube type boiler, designed for plants having limited space conditions and low head room, is described in eight-page booklet.

**Small Motors.**—Wagner Electric Corp., St. Louis. Bulletin 67 describes company's single-phase, polyphase and direct-current motors in fractional horsepower ratings. Construction features are profusely illustrated and described in detail.

**Electric Flow Meters.**—Brown Instrument Co., Philadelphia. Catalog 2002, 56 pages, features latest developments in the company's line of electric flow meters operating on inductance bridge principle.

**Wrought Steel Wheels.**—Carnegie Steel Co., Pittsburgh. Illustrated booklet describes briefly rim toughened wrought steel wheels.

**Centrifugal Pumps.**—Pennsylvania Pump & Compressor Co., Easton, Pa. Bulletin 216 covers features of sleeve and ball bearing multi-stage centrifugal pumps. Bulletin 215 describes single stage centrifugal pumps.

**Carbonal Process.**—Hevi Duty Electric Co., Milwaukee. Results and advantages of carbonal process of carburizing in electric vertical carburizing furnace are covered in Bulletin 931.

**Industrial Railroad Equipment.**—American Car & Foundry Co., New York. Bulletin 102 contains pictorial summary of company's line of industrial railroad equipment.



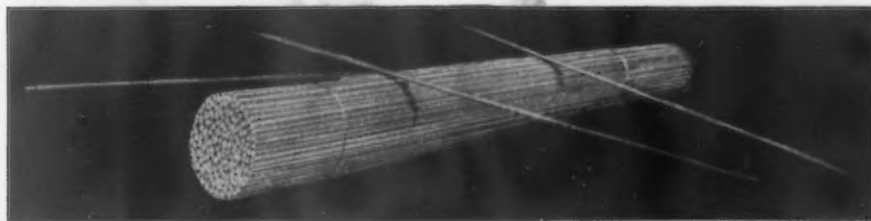
# STRENGTHEN THE WELDING "LINK" WITH MUREX CONTROL



You know the old adage about the chain. "No stronger than the weakest link". Frequently its true of the production chain, too. But if welding is a weak link in your production, then a remedy is Murex . . . and the new control which these heavy all-mineral coated electrodes make possible. Q Murex electrodes largely eliminate "old human element" . . . and that means the old variables. It's the action of the Murex mineral coating under the arc which makes the difference, and the electrode-for-electrode uniformity of that action which exacting care in manufacture assures. Q That action is quiet, almost noiseless, with metal losses through spattering and vaporization negligible, and without objectionable welding fumes or smoke. The operator bends the electrode, which does not injure the coating, and holds a short arc by "riding" it on the work. And the result of this Murex controlled action is invariably an even, maximum deposit of strong, ductile metal in a clean, round fillet or a smooth, flat bead, free from under-cutting. Q Murex electrodes are made 18 inches long in a number of types . . . for welding commercial mild steel, 18-8 stainless, manganese steel, and other materials. Let us send complete information about the use of Murex in your welding . . . Write.

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# MUREX HEAVY MINERAL COATED ELECTRODES

Murex Electrodes are made in the United States by the American Murex Corp. and are sold only by the Metal & Thermit Corp., pioneers of welding and manufacturers of Thermit. Literature on Thermit welding sent on request.



## Sensitivity of Steel and Modern Ideas of Quality

(Concluded from page 1211)

effective conditions. It is suggested that visible inclusions and the metallographic form of carbon-bearing compounds are of less importance than frequently supposed.

*Discussion by Dr. A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.*

MR. GRAHAM has coined the word "sensitivity" in so far as it applies to the series of phenomena that affects the intangible qualities of steel. These intangible qualities have long been known to steel makers under the term "body," and following Mr. Graham's thought, sensitivity is the cause of body. In line with our previous conceptions of the significance of the term body, extra sensitive steels would have poor body and, conversely, insensitive steels would have excellent body. We are much indebted to Mr. Graham for the all-comprising term, but of course the substance of the matter really is not the term itself, but rather the various and individual factors comprised in this term. As Mr. Graham rightly points out, these are determined by chemical composition and physico-chemical distribution.

To the above, Mr. Graham adds another factor, namely, response to cold work, and attributes to this factor alone much importance. That this factor should have such importance is evident from a practical point of view, but whether or not it is involved in the basic mechanism of causation of sensitivity is debatable. It seems to us rather that all physico-chemical reactions are accelerated by strain, and that cold working may be considered analogous to a catalyst in a chemical reaction; that is, cold working markedly affects the time necessary for certain reactions, such as precipitation, to take place under a given set of conditions. That such precipitation or similar reaction can take place without straining is evidenced by the phenomena of temper brittleness and certain special effects in austenitic steels.

### Brittleness a Measure of Sensitivity

There is still another concept involved in this whole matter which Mr. Graham undoubtedly recognizes, but again has not postulated. One of the measures of sensitivity is brittleness. This is a very ill-defined term and requires further elucidation. That brittleness in most cases is a direct function of the rate of loading has been well established. A brief description of experiments on strain aged boiler plates is not out of place at this point. A number of impact speci-

mens cut from the same strain aged plate and adjacent to each other were tested in a 120 ft.-lb. Izod machine; 4 ft.-lb. of energy were absorbed in dropping the hammer from a height corresponding to 120 ft.-lb. energy. In dropping the hammer from heights corresponding to 4, 8 and 16 ft.-lb., the specimen did not break. In dropping the hammer from a height corresponding to 32 ft.-lb., the specimen just broke and absorbed the entire 32 ft.-lb. In dropping the hammer from 60 ft.-lb., 16 ft.-lb. were absorbed, and, to repeat, dropping the hammer from 120 ft.-lb., 4 ft.-lb. were absorbed.

This shows in a very simple manner the existence of the critical rate

of loading. It is possible too that the critical rate of loading and the sharpness of the notch in an impact specimen are fundamentally the same phenomenon; that is, the sharper the notch the higher the rate of local internal loading for the same rate of external loading, other things being equal. If we now realize that the critical rate of loading is also a function of the temperature, we have a more complete conception of the term brittleness.

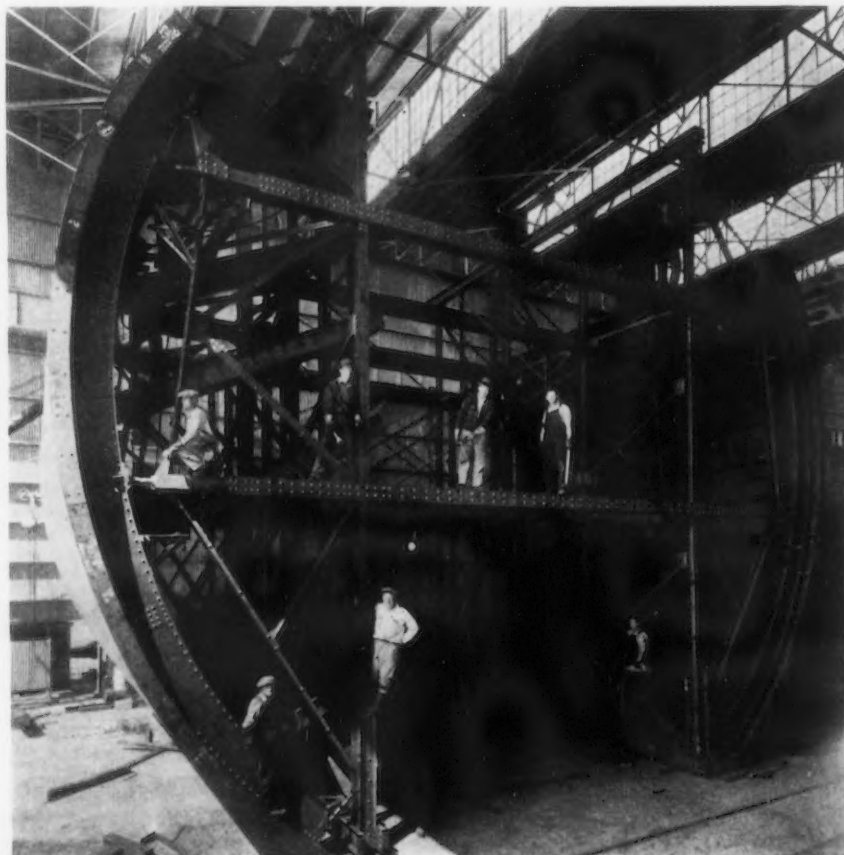
We are in substantial agreement with Mr. Graham that poor body is caused by difference of solubility and precipitation of non-metallics and that it is possible that any single one or combination of the non-metallics may be involved.

Before closing this discussion we would comment on the great value of Mr. Graham's paper. In stating in orderly and logical fashion the fundamental basis of our conception of quality, he has rendered a real service to the industry.

## Los Angeles Plant Builds Large Forms for Concreting Hoover Dam Tunnels

IN the building of the Hoover Dam in Colorado it will be necessary to construct large tunnels to by-pass the waters of the Colorado River. These tunnels will be built by placing a ring of concrete 3 ft. thick in a bore 56 ft. in diameter. No similar undertaking of this magnitude has ever been attempted before. The illustration shows

the erection in the shop of the Consolidated Steel Corp., Los Angeles, of the side forms which will be used in this concreting operation. The forms are operated by jacks so that they can be pulled away from the concrete after it sets. Four forms will be used. The steel required for their construction totals about 2000 tons.





# NOW— MOTOR DRIVE IN ALL SIZES

"FLOATING POWER"—Each of the two 30 horse-power motors, as shown in the photograph below driving a 6000 pound ERIE four-roll board drop hammer, is protected from the shock of hammer operation by being carried on rubber *in tension*. The motor pulleys are of the multiple-V type and the hammer pulleys are flat.

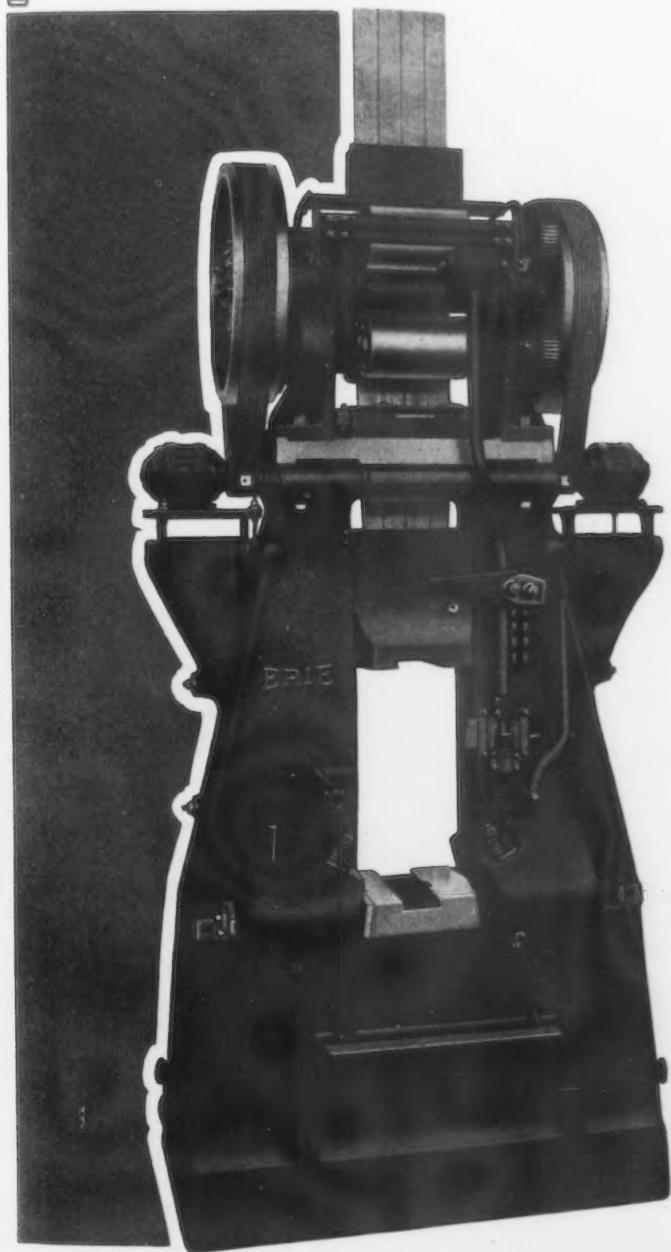
**E**RIE type "M" motor-driven board drop hammers have previously been built only in the two-roll type and in sizes up to 4000 pounds. So great have been the advantages of direct motor drive for board drop hammers—the elimination of heavy side pull at the top of the hammer, which resulted in excessive wear and interfered with die alignment, and which required heavier building construction—that we have developed the direct drive shown, for our four-roll board drop hammers, and can now furnish self-contained motor-driven board drop hammers in all sizes, up to 7500 pounds.

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Steam Drop Hammers  
Board Drop Hammers  
Trimming Presses  
Single- and Double-Frame  
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Paris, France, 8 Rue de Rocroy

**ERIE**





## Iron and Steel Imports in April

(Concluded from page 1228)

compares with the official domestic price of \$4.75, Pittsburgh; tin plate sold at that figure would amount to \$5.50, San Francisco, when moved by rail at the rate of 75c. per 100 lb. The difference in favor of the foreign tin plate, nearly all of which came from the United Kingdom, thus is \$1.30 per box. The only other principal port of entry was New York, which received 137 tons or 3078 boxes out of the total of 92,984 boxes. This movement of tin plate gave the United Kingdom the unusual place of first rank as a source of American steel imports.

### Exports Gained in March, But Scrap Was Important Item

Exports in April rose to 58,118 tons, an increase of 16.6 per cent over those of March, but scrap was by far the largest item moving out, with a total of 19,047 tons. In finished lines exports continued to make a poor showing and were exceeded by imports in such important products as merchant steel bars, structural shapes and hoops and bands. Imports of merchant bars totaled 3331 tons; of structural shapes, 3154 tons, and of hoops and bands, 1889 tons. Belgium supplied 2058 tons of merchant bars and 1556 tons of structural shapes. New York was the principal port of entry for the structural shapes, receiving 1698 tons, of which 937 tons came from Belgium at a landed and duty paid price figured at 1.29c. per lb., which compares with the domestic price of 1.95c., New York, a difference of \$13.20 per net ton in favor of the foreign material, whose price at the Belgian port works back to 0.79c. per lb. Imports of structural shapes from France were 1137 tons and from Germany, 405 tons. Germany supplied 719 tons, France 279 tons and Sweden 181 tons of merchant bars. Of the 2650 tons of reinforcement bars, 1892 tons came from Belgium, 472 tons from France and 233 tons from Germany.

### Rails Come in From Canada

While imports of rails were not large at 685 tons, this movement also was out of the ordinary in that Canada was the chief supplier, furnishing 559 tons. Ferromanganese imports were 2510 tons, of which 1149 tons came from Norway; 669 tons from the United Kingdom and 650 tons from Canada. India supplied 5564 tons of the pig iron imported, while 3900 tons came from the United Kingdom. Imports of manganese ore totaled 14,091 tons, of which 14,062 were concentrates of 35 per cent and over. Of this total Soviet Russia supplied 5163 tons; the Gold Coast of Africa, 4670 tons and Brazil, 3930 tons.

Of the scrap exported, 16,849 tons went to Japan, which replaced Canada as the principal country of exports. Scrap shipped to Canada totaled 1432 tons and to China, 583 tons. Canada took 4081 tons of the total black steel sheet exports of 4534 tons. Soviet Russia led as the principal recipient of tin plate exports, taking 874 tons out of the total of 4460 tons. The Philippine Islands took 736 tons; China, 640 tons; Peru, 649 tons and Mexico, 541 tons.

## April Foundry Equipment Orders Dropped Sharply

Foundry equipment orders in April, indicated by the index figure 13.75, were 50 per cent less than in March and were even lower than in November, when bookings were the poorest for any month in 1931, according to the monthly survey of Foundry Equipment Manufacturers Association. The April figure compares with that in March of 27.5; February, 27.6; January, 20.5; December, 20.9; November, 17.2 and October, 44.8. The association derives its base 100 from the average monthly shipments in 1922, 1923 and 1924.

## Scrap Trading Rules Are Approved by Commission

WASHINGTON, May 27. — The scrap iron and steel industry has accepted revised trade practice rules promulgated by the Federal Trade Commission, one of which declares "top dressing" to be an unfair trade practice. The rules, as finally approved by the commission, follow:

The practice of delivering inferior products against contracts to supply scrap iron and steel according to certain specifications by so arranging the shipments in the cars that the inferior products will not be readily discovered on surface inspection, without the consent of the consumers and/or purchasers to such substitutions and with the effect of deceiving or misleading consumers and/or purchasers, is an unfair trade practice.

This is one of four Group I rules, which cover practices held to be illegal. The other three relate to defamation of competitors; maliciously inducing breach of contracts between competitors; and giving money or anything of value to agents of customers or prospective customers without the knowledge of their employers.

A rule relating to presentation of fictitious bills of lading to secure advances of money, formerly in Group I, has been transferred to Group II,

which covers practices that the commission accepts as "expressions of the trade." The commission entirely struck out former Group I rule which related to circularizing an industry with price quotations containing misleading language or offering prices which appear to be above the general market in any territory.

The Group II rules approved concern fictitious bills of lading; failure of dealers to give credit for overweight, where such credit has been passed by the consumer; contracts as business obligations; making an invoice a false record; arbitration; accurate methods of determining cost; and a committee on trade practices.

## River Shipments of Steel Declined in April

Shipments of iron and steel products on the Ohio River in the Pittsburgh district during April amounted to 32,972 net tons, according to the United States Engineer Office, Pittsburgh. This compares with 33,254 tons in the preceding month, and with 91,570 tons in April, 1931. Monongahela River steel shipments during April amounted to 23,849 tons, compared with 32,324 tons in March, and with 57,751 tons in April, 1931. Only 501 tons of steel moved on the Allegheny River during April, as compared with 550 tons in March, and with 1250 tons in April of last year.

## Japanese Invent New Magnetic Metal

Invention of a new magnetic alloy, composed of nickel, steel and aluminum, is reported in Japanese trade circles, according to a report to the Department of Commerce from Assistant Commercial Attaché W. S. Dowd, Tokyo.

Prior to this invention, what is known as K. S. steel, also invented in Japan, was believed to have had the strongest magnetic characteristics of any metal or alloy. But this new alloy is claimed to have twice the magnetic strength of K. S. steel, to cost one-fifth as much and weigh 20 per cent less, and to be more durable.

It has been patented in Japan, Great Britain, the United States, Germany, France, Italy, Canada, Switzerland and Sweden.

French export trade in iron and steel products rose from 13.4 per cent of production in 1913 to more than 43 per cent in 1930, according to a trade bulletin issued by Bureau of Foreign and Domestic Commerce, Washington. The volume of exports in this period increased from 629,674 metric tons to 4,067,640 metric tons.



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